THE FRASER VALLEY HEALTH CENTRE

and

THE EASTERN FRASER VALLEY CANCER CENTRE

BUSINESS CASE

February 8, 2001

Submitted by

Fraser Valley Health Region
BC Cancer Agency
Fraser Valley Regional District
Health Services Group
BC Buildings Corporation

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EXECUTIVE SUMMARY

Introduction

The Fraser Valley Health Region and the BC Cancer Agency submitted a proposal to the Ministry of Health in June 2000 to construct two new health care facilities on lands owned by the Regional Hospital District on Marshall Road in Abbotsford, BC. The Fraser Valley Health Centre is a 300-bed acute-care hospital, intended as a replacement for the Matsqui-Sumas-Abbotsford Hospital located in Abbotsford. The Eastern Fraser Valley Cancer Centre is a new facility. Both facilities will provide services to the local health area as well as specialized programming to the residents of the entire Fraser Valley Health Region.

In late June 2000, the FVHR and BCCA received approval and planning funds from the Ministry of Health to proceed with planning for these facilities. This document summarizes the outcome of this planning process and represents the business case to support the project. It addresses the requirements for Capital Project Funding specified by the Ministry of Health and the Ministry of Finance and Corporate Relations.

History of This Project

The Fraser Valley Health Region and the Ministry of Health have been seeking solutions to the health care services shortfall in the Region since 1986. Seven options were developed for renovating the existing MSA Hospital between 1987 and mid-1989. A study completed for the Ministry of Health in April 1990 recommended a new facility on a new site. In July 1990, the Ministry of Health announced approval of a new 300-bed facility on a new site. The Central Fraser Valley Regional Hospital District purchased property for the new hospital on Marshall Road in Abbotsford in March 1991. Planning proceeded through tendering specifications and cost estimates. The project was put on hold in October 1997.

In May 2000, the Ministry of Health requested a review of the MSA Hospital project. The Ministry asked the FVHR to consider the implications of health care regionalization on the previous proposal and to consider how a regional cancer centre might be integrated into the plans for the designated site.

A comprehensive project proposal was submitted to the Ministry of Health in June 2000. The proposal defined the demand for services within the Region and the impact of co-location of cancer services. The proposal also provided a comparison costing of several designs and development options and recommended development on the new site with BCCA. After reviewing this proposal, the Ministry of Health approved funding to complete a business case in support of the proposal.

Development of This Business Case

Under the guidance of a Steering Committee, a Project Team was established to develop the Business Case. Activities undertaken as part of this development process included:

- complete detailed functional programming;
- review relationship of proposed acute care programs with existing and planned regional programs;
- complete an external assessment of proposed programs;
- review and update project costing (from May 2000 proposal submitted to Ministry of Health);
- explore public partnership opportunities;
- review parking capacity.

Summary of Request

The current estimated cost of the project, based on the Facility Program dated January 31, 2001 is as follows:

Item	Estimated Cost $
A. Land	0
B. Construction	128,178,200
C. Professional Fees	15,548,400
D. Furnishings & Equipment	53,198,000
E. Municipal & Connection Fees	1,589,600
F. Management & Overhead	7,990,600
G. Project Contingency (2%)	1,566,500
H. Payable Goods & Services Tax	2,476,100
I. Total Project Cost	**$210,547,400**

A summary of the capital and operating costs for each facility is shown in the following table.

	Capital Costs	Operating Costs
Fraser Valley Health Centre	$178,213,700	$83,305,100
Eastern Fraser Valley Cancer Centre	$ 32,333,700	$10,551,334

Highlights of Demand

Residents of the Fraser Valley need improved access to health services locally as well as expansion of health care services available in the Region. Although the population of Abbotsford has increased 2.4 times since 1980, the number of acute care beds has remained constant and cancer care has not increased at all. Increased pressure on services provided in Vancouver mean that regional health authorities need to care for more patients within their home region. Currently, averages of only 75% of cases are cared for within the FVHR and this falls well short of the desired goal of 85%. The current Matsqui-Sumas-Abbotsford Hospital is not suitable for expansion and cannot meet the secondary or tertiary acute care service or cancer needs of the growing regional population. Current and projected demographics for the Lower Mainland show that cancer care available in the Region is not adequate to meet the needs of this growing population.

Acute Care Services

The need for a new facility that provides a broader scope of regional services is directly linked to the vision, mission and strategic directions of the Fraser Valley Health Region. The Region is significantly hindered in its ability to achieve its goals and objectives because of the current physical plant at the MSA Hospital site.

Completion of a new acute care facility in 2005 will allow the FVHR to provide the necessary access to quality patient care to the residents of the five local health areas as well as to patients in adjoining regions who wish to seek care closer to their home. The hospital is the critical link to continuing service delivery in this community.

The need for a new acute care hospital in Abbotsford is driven by a number of factors:

- the demand for additional inpatient beds to meet the current and future needs of the region;
- the need for additional outpatient capacity for programs provided to the local community;
- the physical plant does not allow the hospital to provide adequate infection control procedures;
- the need to provide new and expanded services within the Region in order to care for drastically more patients rather than trying to access services through the resources available in other regions, specifically in Vancouver;
- lack of sufficient numbers of inpatient beds results in delays or inability to provide appropriate access to services, such as:
  - increased surgical wait times due to restricted access for surgical cases requiring an inpatient stay;
  - prolonged stays in the emergency room (ER) and delay in care due to back ups in the ER;
  - lack of sufficient regional inpatient psychiatric beds results in, on average, two admitted psychiatric patients per day being held in ER at MSA Hospital and one in Mission Memorial Hospital;
  - frequent shuffling of patients from room to room is necessary - the current average is 80 transfers a day at MSA Hospital.

Cancer Care

Cancer projections for the Fraser Valley show an annual increase of approximately 3.5% in the numbers of new cancer cases in the community. These projections are based on a regression line developed from 10 years of cancer registry data. It is expected that there will be over 13,000 new cases of cancer reported annually in the FVHR by 2012. The number of people living with cancer (prevalent cases) and requiring continued care from the cancer system is also increasing. There is an expected annual increase by 7% of the overall cancer prevalence rates.

A shift in case-mix and its associated changes in fractionation for radiation therapy patients will also contribute to increasing workloads. Consultations become more extensive and take more time as patients live longer with cancer and the range of services they need to access broadens. Further, it can be expected that as the Provincial Surgical Oncology Program is developed, more patients will be accessing cancer centres for a multidisciplinary oncology consultation prior to their surgery.

The two existing cancer centres in the Lower Mainland, Vancouver Cancer Centre and Fraser Valley Cancer Centre, were designed to accommodate 5,000 and 2,500 new patients respectively. Based on new patient registrations alone, both centres are currently working in excess of their design capacity by about 700 new patients in 1999-2000. However, these measures are now considered inadequate because of the number of prevalent cases and the many disease sites for which multiple treatment modalities are required.

Radiation therapy remains a major form of treatment for cancer and access to care is completely dependent on the capacity of BCCA facilities. In the Lower Mainland there are currently eleven radiation therapy machines. A twelfth machine will be in service at the Fraser Valley Cancer Centre (Surrey, BC) in January 2001. However, the growth in demand for treatment services means that by 2004 the Lower Mainland will already have a shortfall of two treatment machines. Together these factors drive the need for three more treatment machines to be in service by 2004. The demand for radiation therapy alone makes a compelling case for a new centre in Abbotsford.

Medical oncology and chemotherapy workload is growing at a greater rate than any other components of service. Chemotherapy services are provided both within cancer centres and in the community. Projections identify the degree to which future workload might be accommodated in a new cancer centre with a capacity similar to the current Fraser Valley Cancer Centre and the workload that at a minimum will need to be accommodated in the community. The data clearly shows the need for additional comprehensive cancer care facilities in the Fraser Valley. In global terms this means the duplication of the (Surrey) Fraser Valley Cancer Centre, hence, the request for the Eastern Fraser Valley Health Centre services.

As outlined above, there is a need to expand cancer services into the Eastern Fraser Valley. The Cancer Centre requires a host hospital to co-locate in order to provide comprehensive services to patients.

Relationship between Cancer Centre and the Fraser Valley Health Centre

The BC Cancer Agency currently provides comprehensive cancer care services through four regional cancer treatment facilities and through the Communities Oncology Program that is run in partnership with hospitals in the community. The Vancouver Cancer Centre is the only treatment facility that is self sufficient in terms of clinical and operating support services. The cancer centres in Victoria, Kelowna and Surrey have been designed to allow the cancer centre facilities and staffing to be focused on the oncology speciality services while all the support and general clinical functions are provided through a purchased services arrangement with the "host hospital". This model of a "free standing" cancer centre closely linked to a major hospital has proved to be very effective both in this province and many other centres across Canada.

Scope of Services

Fraser Valley Health Centre

The programs and services to be offered in the FVHC were developed through a formal functional programming exercise. The programs and services will serve the needs of the local Abbotsford community as well as house some of the regional programs. The other hospitals in the region will play similar roles by providing standard services to the community and offering some consolidated regional programs. The Regional Clinical Program Plan provides the detail of the organization of services.

The FVHC will support the following programs:

- general surgery and all subspecialty inpatient surgical services including orthopedics, gynecology, ENT, vascular, plastics;
- general surgery and all subspecialty outpatient surgical services including general surgery, orthopedics, gynecology;
- all specialty adult medical services including nephrology (hemodialysis unit), cardiology (no interventional cardiology planned), neurology, gastroenterology, respirology;
- level II obstetrics with a level II nursery;
- emergency medical services;
- psychiatric services;
- pediatric services (inpatient and outpatient);

- family practice services including geriatric medicine, palliative care, emergency medicine, level I obstetrics, GP pediatrics.

The following table illustrates the inpatient services and programs, proposed bed numbers, assumed occupancies for 2005 for the proposed FVHC site.

Fraser Valley Health Centre
Bed Summary

	2005			2015		
General Medical/Surgical (including includes rehab)	132	85	40,953	142	90	46,647
Telemetry	14	85	4,344	16	90	5,256
Surgical Step Down	8	85	2,482	8	85	2,482
Palliative	7	85	2,172	10	90	3,285
Oncology	5	85	1,551	10	90	3,285
ICU/CCU	13	85	4,033	18	85	5,585
Pediatrics	18	60	3,942	18	70	4,599
Obstetrics (including births)	24	61	5,314	28	64	6,541
NICU	7	85	2,172	10	85	3,103
Psychiatry	33	90	10,841	40	90	13,140
TOTAL	261		77,804	300		93,922

Further information about percent occupancy, patient days, and cases is included in the Project Definition Report. The building space summary estimates that 45,693 building gross square metres will be required to support the functional program.

Eastern Fraser Valley Cancer Centre

The Cancer Centre in the Eastern Fraser Valley will provide:

- new patient multidisciplinary consultation and care planning;
- chemotherapy and systemic care;
- access to national and international clinical trials;
- radiation therapy;
- supportive care and pain and symptom management;
- nutritional consultation and support;
- patient and community education in cancer prevention, screening;
- professional education/liaison for community based cancer support and treatment programs.

The estimated workload volumes are shown in the following table.

Eastern Fraser Valley Cancer Centre
Workload Volumes

Lower Mainland	**2000**	**2005**	**2015**
Cancer Frequency (New Cases)			
Area 1	5,008	5,545	7,002
Area 2	4,489	5,303	7,358
Northern Region	802	963	1,340
Total	10,299	11,811	15,700
Radiation Therapy			
Total Cancer Cases	10,299	11,811	15,700
Total Fractions	103,216	129,685	197,820
Accelerators Required (10 hour days)	12	14.4	22
Accelerators Available	11	15	22
▪ Vancouver	7	7	8
▪ Surrey	4	5	5
▪ Abbotsford	0	3	4
▪ Other (to be determined)	0	0	5
Eastern Fraser Valley	**2000**	**2005**	**2015**
New Patient Registrations	0	1,300	2,700
Total Patient Appointments	0	30,000	70,000
Total Chemotherapy Visits	0	3488	7,216
Radiation Therapy Fractions	0	27,000	36,000

Alternatives Considered

There have been many alternatives considered throughout the history of the project, such as:

- expansion versus new construction on the existing site;
- existing site versus new site for construction versus alternative site;
- degrees of reuse of existing design work versus complete new design and development of single building versus multi-building campus (allowing non post disaster spaces to be provided at a more economical level);
- integration of Cancer Centre into the hospital yet providing a distinct environment for cancer patients and their families;
- provision of specific services in a hospital facility, on a hospital site or in the community and analysis of which community this should be in;
- integration of inpatient and outpatient functions versus grouping of ambulatory functions; and
- procurement alternatives for the construction process.

With the facility program now complete, the Project Team has spent some time considering the impact of these requirements on the ultimate design of the overall facility. While some elements of the existing (1997) design may be salvageable, information contained in the best practice review point to alternative building forms as warranting some additional consideration. Major site planning and stacking concepts outlined in the Project Definition report (physical plan review September 14, 2000) have been upheld in a subsequent concept planning session held January 26, 2001. Using this planning model, space for the overall facility can be segmented into at least two separate occupancy groups. While higher unit rates are used for the greater portion of the hospital structure, lower unit rates have been applied against occupancies not requiring this (post-disaster) classification. Gross-up rates for the facility have been established to permit a measure of flexibility as the project proceeds into the next (conceptual and schematic) design phases of development.

The project proposal prepared in June 2000 explains how alternatives have been considered. The need for additional health services is in Abbotsford. Examination of health services being offered in other facilities in the Region have been conducted on one level by Val Gillies. Program value analysis has been conducted on another level by KPMG. Shell space was constructed earlier in Chilliwack and this is one reason that the number of beds needed for FVHR have been reduced. The cancer centre could not be co-located with a hospital on another site.

Project Management and Governance

A project management and governance structure was set up to manage all issues related to scope, schedule and budget. This section of the Business Case describes:

- the Terms of Reference for the Steering Committee;
- the project management structure (roles, reporting relationships, etc.);
- the project schedule;
- the independent monitoring and evaluation process for the project;
- the project approval process;
- relevant legal, technical and policy issues;
- financing sources; and
- a communications strategy.

Costs and Benefits of The Project

The hospital PCOE has been estimated based on information contained in the Facility program which was issued in 'final draft' form at the end of January, 2001.

The PCOE is set up to identify the workload volumes, FTE, salary and benefits, supply and total costs projected for an anticipated opening in 2005. The workload volumes, FTE and total costs are provided for the planned operation of the 2000/01 fiscal year. The total proposed change is provided for each of these categories. The document is sectioned by major clinical, diagnostic and support categories with totals provided for each section. The revenue section identifies the expected revenue changes related to the projected volumes for 2005.

The costs were developed wherever possible by determining the worked hour to volumes. The worked hour to volume relationship was reviewed against the original submission, current operations, other hospital data, and available staffing guidelines. The Ministry of Health provided the initial cost for the renal program. The renal costs have been escalated for the 2000/01 contract cost changes. Overall salaries have been costed at the 2000/01 rates inclusive of contract changes. Benefits were costed at 19.5 percent of salaries. Supplies were costed using the 2000/01 budgeted rate per volume of activity for the individual areas.

The major volume or size changes included in the PCOE are summarized in the following table:

Summary of Volume Changes

	2000/01 Budget	2005 Projected	Percent Increase
Beds	204	261	27.9
Patient Days	59,464	77,804	30.8
OR Visits	7,100	11,850	66.9
Emergency Visits	42,000	50,369	19.9
Ambulatory Care Clinic Visits	11,838	22,430	89.5
Laboratory Units	2,768,179	4,375,163	58.0
Medical Imaging Units	2,323,630	3,042,208	30.9
Building Square Meters	18,000	45,693	254.0

The Pre Construction Operating Estimate is summarized as follows:

The total Net Pre Construction Operating Estimate is	$83,305,100
The 2000/01 Operating Budget (before approval of expected 'rollover' requirement) is	$46,400,907
PCOE change	$36,904,193

Non-Financial Outcomes

In addition to financial measurement of costs and benefits, there are non-financial aspects to be taken into account for this project. Although listed as non-financial, many of these items do in fact have an impact on the bottom line. This includes:

- a new facility and equipment will attract care providers to the region. This is a critical part of the delivery of services to residents;
- capacity to do higher volume of cases in the facility. This will reduce wait times for services to the residents. There will be the ability to handle the projected volumes in the program;
- new and expanded programming will facilitate repatriation of patients currently being cared for in other regions;
- ability to integrate new technologies and to continue the inclusion of less invasive techniques into patient care. This will result in reduced hospital stays for inpatient care and increase day care procedures;
- reductions in closed beds due to isolation requirements. Currently with a very limited capacity to isolate in the current facility, isolation requirements result in closure of other beds within the room;
- the project will create work in the community. It is estimated that the construction will produce on average about 10 people per million dollars of construction;
- the new environment created in the new centre will improve the working environment and increase the productivity of staff. The facility will allow operational functioning as expected in the plan;
- it is expected that there will be a reduction in the requirement of transferring up to 80 patients a day and hence, the potential for injuries to staff will be reduced and staff will be better deployed to provide patient care;
- there will be fewer labour issues as a nurse will be less involved in transferring patients and furniture, which is considered a non-nursing duty;
- the increase in the number of single rooms will increase the healing capacity for patients;
- the BCCA statistics indicate that BC has the best statistics for cancer control in Canada. With the new equipment and the ability to address wait times more effectively, the BCCA performance will be benchmarked with other countries for comparison;
- the facility will be built on budget to the functional planning assumptions.

Performance Measures

The Fraser Valley Health Region and BCCA will establish baseline performance indicator information and identify the data collection process.

Fraser Valley Health Centre

There are several areas in particular that will be closely monitored for their outcomes in this project, as follows:

- the ability to reach the repatriation of residents targets of 90% or higher capture of non-surgical cases and 85% of surgical service demand by 2010, increasing to 90% or higher in most services by 2015;
- the ability to reduce ALC patients to 7% by 2005, down from a current level of approximately 12% at the MSA Hospital site. Future targets are 5% by 2010 and 3% by 2015;

- the ability to consolidate selected elective services for the region at Mission Memorial Hospital and Chilliwack General Hospital;
- the ability to attract and retain staff to provide the specialized services required for the future;
- the effectiveness of the strategies to manage the needs of seniors and the strategies to programming ambulatory care;
- the effectiveness of the psychiatry/mental health program design to ensure a fully integrated community – hospital program. The success of off-site locations and ability to successfully pursue "P3" construction opportunities on the FVHC site for some portion of the psychiatry/mental health ambulatory/outpatient programs.

Eastern Fraser Valley Cancer Centre

The following list of preliminary indicators has been developed to measure the quality of service provided at the new Cancer Centre.

Screening	
Effectiveness	% of the population (EFVCC catchment area) at risk, that is screened
Efficiency	turn around time for lab results
Accessibility	wait time for genetic counselling
Treatment	
Radiation Therapy	
Appropriateness	% compliance to treatment protocols
Efficiency	% utilization of available treatment time
Accessibility	wait time – diagnosis to consultation with Radiation Oncologist
	▪ % compliance to less than 2 week wait time standard
	wait time – 'ready to treat' to first treatment appointment
	▪ % compliance to less than 2 week wait time standard
Systemic Therapy	
Appropriateness	% compliance to treatment protocols
Efficiency	% utilization of available treatment time
Accessibility	wait time – diagnosis to consultation with medical oncologist % compliance to less than 2 week wait time standard
	wait time – 'ready to treat' to first chemo/drug therapy appointment
Rehabilitation	
Effectiveness	% of patients with persisting disability following treatment
Palliation	
Effectiveness	% of patients dying in preferred surroundings
	% of patients dying pain free

Cancer Centre	
Appropriateness	% compliance to treatment protocols
Efficiency	# of fully admitted cases # ambulatory visits
	ambulatory visits per worked hour
	% rebooking of appointments
	% utilization of ACU space
Accessibility	average distance travelled by patients
Acceptability	patient/client satisfaction rates
Research	
Effectiveness	% of eligible patients enrolled in a clinical trial
Accessibility	% of eligible patients offered enrolment in a clinical trial
Education	
Competence	# of student learning opportunities
	# of students

Risk Management

The responsibility for managing risks rests with the Steering Committee. The Risk Management strategy is based on Ministry of Finance guidelines. For each risk factor, the probability and impact on the project was assessed to classify the degree of risk associated with the project, e.g. low, medium or high risk. A Risk Classification Framework is shown in the following table. The Project Team used this Framework to assess the degree of risk related to this project.

Risk Classification Framework

Area	Factor	Probability 0 - 3	Weighting 0 - 3	Result (Probability Impact)
General Risk	High visibility	3	2	6
	Public concerns/objections	0	0	0
	Environmental factors	1	1	1
	Safety issues	1	1	1
	Size of project	1.5	1.5	2.25
	Legislative changes	2	2	4
Management Risk	Complexity	1.5	1.5	2.25
	Unclear or changing scope	3	1.5	3.5
	New technology	3	3	9
	Project newness	1	1	1
	Project manager experience	.5	3	1.5
	Design team experience	.5	3	1.5
	Contractor experience	.3	5	1.5
	Losing momentum through procedures	2	3	6
	Safety issues	1	3	3
	Aggressive/changing time schedule	2	2	4
	Labour productivity drop	1	3	3
Construction Risk	Availability of skilled trades	2	3	6
	Availability of bondable contractors	2	3	6
	Labour disruptions	3	3	9
	Material/equipment availability	1	3	3

Area	Factor	Probability 0 - 3	Weighting 0 - 3	Result (Probability Impact)
	Weather-related problems	.5	1	.5
Economic Risk	Project funding uncertainty	3	3	9
	Labour cost Increases	3	3	9
	Material/equipment cost increases	3	3	9
	Currency fluctuation	3	3	9
	Project Total	44.8/78	61.5/ 78	111 of a potential of 234 points

Risk Management Strategies

A major part of managing the risk on this project will be undertaken through the Project Management Office. Risk management strategies for specific stages of the project include:

- environmental risk management includes conducting a traffic study, green building, and storm water treatment and other studies as appropriate;
- evaluation, review and approval processes during the engineering and design stages of the project. An evaluation to ensure that the design is reflective of the project objectives and scope and a review that is concerned with regulations, licensing, safety and other standards. In addition, the detailed design phase should include cost management and value analysis techniques;
- procurement risk management strategies including processes and alternatives for contracting design and construction; procurement of property, materials, equipment and land; and assessment of the cost versus quality of the proposals received;
- construction management risk strategies including the need for contract financial management, supervision and inspection, establishing protocols for changes required and the formulation and implementation of recovery plans;
- the post-construction phase should include a formal process that should be set-up to assess the project's completion, conduct appropriate tests to ensure proper functioning and test compliance to ensure all specifications, regulations and contractual agreements have been adhered to. Protocol for unsatisfactory delivery should be established to resolve any disagreements, discrepancies and issues in the most efficient and effective manner to facilitate timely project closure and delivery;
- follow-up includes determining the projects success with regards to the asset built and the costs associated with its construction; all elements of the project's life cycle should be evaluated in order to determine both positive and negative outcomes.

Implementation Plan

A detailed implementation plan was developed which shows the activities and sequencing of the project. The target opening date for the facilities is 2005.

Conclusion

This business case presents compelling rationale to build a new health care centre on a new site in Abbotsford. The combined facility will better accommodate the health care needs of the Fraser Valley Health Region and reduce cancer treatment wait lists for Lower Mainland residents.

The strengths of the project are summarized as follows:

- for the first time in BC, a Cancer Centre is being designed at the same time as a major acute care facility which will result in operational efficiencies and reduce or eliminate many of the problems that occur with add-on facilities;
- the new combined facilities will offer new and expanded health care services in concert with other hospitals in the region;
- the project supports repatriation of patients so that care can be provided 'closer to home';
- the project will provide advanced technologies and information systems in the facility;
- retaining design elements from the previous project design may produce cost and scheduling efficiencies;
- the project procurement methodology that has been proposed will result in open-market competition, and provide opportunities for shorter completion time;
- employing value analysis and a range of other risk management strategies in all phases of the project design mitigates government exposure to risk throughout the duration of the project;
- the Project Team is examining all opportunities to develop a modern facility that meets the present and future regional health needs, including a review of world-wide best practises.

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APPENDIX A - EASTERN FRASER VALLEY CANCER CENTRE PROJECT DEFINITION REPORT (SEPARATE BINDER)

APPENDIX B - KPMG. FRASER VALLEY PROJECT PARAMETERS REVIEW - EXTERNAL ASSESSMENT. OCTOBER 2000

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APPENDIX D - SELECTED ASPECTS OF THE PROPOSAL SUBMITTED TO THE MINISTRY OF HEALTH, JUNE 2000, FOR THE FRASER VALLEY HEALTH CENTRE AND EASTERN FRASER VALLEY CANCER CENTRE, ARE INCLUDED IN THIS APPENDIX

- D(i) - REGIONAL BED CALCULATIONS
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1.0 INTRODUCTION

The Fraser Valley Health Region (FVHR) and the BC Cancer Agency (BCCA) submitted a proposal to the Ministry of Health in June 2000 to construct two new health care facilities on lands owned by the Regional Hospital District on Marshall Road in Abbotsford, BC. The Fraser Valley Health Centre is a 300-bed acute-care hospital, intended as a replacement for the Matsqui-Sumas-Abbotsford Hospital (MSA) located in Abbotsford. The Eastern Fraser Valley Cancer Centre is a new facility. Both facilities will provide services to the local health area as well as specialized programming to the residents of the entire Fraser Valley Health Region.

In late June 2000, the FVHR and BCCA received approval and planning funds from the Ministry of Health to proceed with planning for these facilities. This document summarizes the outcome of this planning process and represents the business case to support the project.

This Business Case addresses the requirements for Capital Project Funding specified by the Ministry of Health and the Ministry of Finance and Corporate Relations.[1]

1.1 History of This Project

Matsqui-Sumas-Abbotsford Hospital in Abbotsford is the largest of the four acute care hospitals in the Fraser Valley Health Region. About half of the FVHR's residents live in Abbotsford. Although the Region's population has increased 2.4 times since 1980, the complement of acute beds at MSA has remained at 202 during the same period. By 2015, the population of Abbotsford is expected to increase by 31% (35,843), and the Region's population is expected to increase by another 84,012 people (34.5%).[2] More inpatient, emergency and ambulatory-care capacity is urgently needed to provide local as well as regional services.

The Fraser Valley Health Region and the Ministry of Health have been seeking solutions to the health care services shortfall since 1986. Seven options were developed for renovating the existing MSA Hospital between 1987 and mid-1989. A study completed for the Ministry of Health in April 1990 recommended a new facility on a new site. In July 1990, the Ministry announced approval of a new 300-bed facility on a new site. The Central Fraser Valley Regional Hospital District purchased property for the new hospital on Marshall Road in Abbotsford in March 1991. Planning proceeded through tendering specifications and cost estimates. The project was put on hold in October 1997.

In May 2000, the Ministry of Health requested a review of the MSA Hospital project. The Ministry asked the FVHR to consider the implications of health care regionalization on the previous proposal and to consider how a regional cancer centre might be integrated into the plans for the designated site.

A comprehensive project proposal was submitted to the Ministry of Health in June 2000.[3] The proposal provided a review of the 12-year history of the project, defined the demand for services within the

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[1] Ministry of Finance and Corporate Relations. Capital Project Business Case. Undated.

[2] The population data used in this business case is taken from BC Stats population estimates, edition # 25 (PEOPLE 25). These estimates are based on the 1996 census.

[3] Fraser Valley Health Region and BC Cancer Agency. New Fraser Valley Health Centre Abbotsford and Fraser Valley Cancer Centre. Proposal submitted to the Minister of Health. June 2000.

Region and the impact of co-location of cancer services. The proposal also provided a comparison costing of several designs and development options[4] and recommended development on the new site with BCCA. After reviewing this proposal, the Ministry of Health approved planning funding of up to $1 million to complete a business case in support of the proposal.

1.2 Business Case Development

This section describes the process used to develop the Business Case.

1.2.1 Steering Committee and Project Team

A Steering Committee was struck in August 2000, to guide the development of the Business Case. The Health Services Group, BC Buildings Corporation (HSG/BCBC) was engaged to assist the Fraser Valley Health Region and BC Cancer Agency with the development of the Business Case.

The HSG/BCBC activities included:

- coordinating all activities up to and including submission of the Business Case to the Ministry of Health;
- reviewing and confirming operational demand and program delivery;
- organizing and managing the development of an outline of the facility program and conceptual block planning; and
- coordinating communications on the project.

A Project Team was formed to assist in the development of the Business Case. Core Team members included representatives from the FVHC, BCCA, HSG, BCBC, Architectura, RPG and Stantec Architecture.

The responsibilities of the Project Team were to:

- deliver the project on schedule, on scope and on budget;
- conduct regular information updates with the project team members and others as required;
- report to the Steering Committee at specific milestones;
- report progress against project plan with budget;
- bring forward issues raised by consultants; and
- meet regularly as required.

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[4] The comparison included analysis of previous design and new design proposals levelled year 2000 dollars. The proposal did not include projections of escalation of project costs beyond 2000.

1.2.2 Detailed Functional Programming

Programming for the project has been undertaken as two major blocks of work. The first block, which is represented in the Project Definition Report, was prepared in support of this Business Case. It was produced by The RPG Partnership, in consultation with users and with support from Architectura, Stantec, and BTY (see Appendix A). This report includes the following materials:

- a 'program parameters' report which outlines and reviews the regional demand for services;
- a 'master program' which applies modern space standards to the program areas for both the FVHC and EFVCC in the combined facility;
- a series of functional relationship diagrams that illustrates the relative adjacencies of major program areas contained in the facility;
- project definition report comprised of the above plus, program level estimates for the project; and
- pre construction operating estimates which project operating costs for the new facility upon completion.

This level of detail has allowed the Project Team to consider a range of site configurations sufficiently detailed for quantity surveyors to generate program-level capital estimates for the project.

A second level of detailed facility programming was undertaken between October 2000 and February 2001. The facility program will be used as the basis for conceptual and schematic design phases that follow project approval by Treasury Board.

Several programs are identified for further in-depth analysis to fully define the parameters of services to be provided. These areas have been reviewed in concert with the facility program with funding incorporated into the project. The Project Team was expanded to coordinate information gathered by multi-disciplinary user teams. Coordinated by KPMG, these teams included physicians, nurses, administrative representative(s) and other professionals. These teams will:

- reviewed current literature;
- examine other similar programs in the Province, the nation and internationally;
- analyze technology and biotechnology trends;
- investigate other industries that display areas of potential interest; and
- integrate changes with the facility programming done by the RPG Partnership.

Teams completed their investigations at the end of January 2001. The following programs were investigated:

- critical care areas including cardiac critical care, intensive care units, surgical step-down, telemetry;
- emergency medicine;
- ambulatory care including the wellness/education, outpatient clinics, surgical day-care, medical day-care etc.;
- maternal/child care; and
- medical-surgical inpatient unit design.

The ability of the design to create a healing environment will be explored. In addition, a separate team is reviewing a variety of conceptual models for the facility. The teams will examine the implications of each model on functional ability, costing (both capital and operating) and structural feasibility.

1.2.3 Regional Clinical Program Plan

The FVHR retained a consultant in September 2000 to create a Regional Clinical Program Plan. The intent of the plan was to determine where each of the clinical programs will be located within the Region and address the related space implications in each of the facilities of the region.

No significant changes to the programming of this new facility have resulted from this review.

1.2.4 External Assessment of Programs

1.2.4.1 Fraser Valley Health Care Centre

An external consulting team was hired to:

- complete a high level external review of the capital project parameters providing comment on the robustness of the planning process underlying the parameters;
- identify potential areas for further in-depth review; and
- focus on opportunities to add value to the project.

The full report prepared by KPMG can be found in Appendix B. The findings of the external assessment of programs by KPMG follow.

"Overall the team is satisfied that the proposed size of the new facility will be appropriate to fulfil its role in the regional acute care program. The size of the facility will assist in meeting regional targets of 90% or higher capture of non-surgical and 85% of surgical service demand by 2010, increasing to 90% or higher in most services by 2015. Achieving these targets will hinge upon the recruitment and retention of necessary specialized nursing, technologist and medical personnel.

Opportunities to consolidate selected elective services for the region at Mission Memorial Hospital and Chilliwack General Hospital will be pursued.

Only a small percentage of acute beds will be occupied in the future by alternate level of care (ALC) patients. The region has identified an ALC target of 7% for 2005 down from a current level of approximately 12% at the MSA site. Further targets are 5% by 2010 and 3% by 2015.

The team is supportive of the proposal not to offer specialized pediatric surgery, children's acute psychiatry, very high-risk maternity care, thoracic surgery, neurosurgery, and cardiac surgery in the region. It is important for the region to continue to engage in macro-regional planning with Simon Fraser, South Fraser and the Vancouver/Richmond regions.

There are a number of areas for continued planning and more in-depth review, including a strategy to manage the needs of seniors, manage ALC, and programming ambulatory care.

The psychiatry/mental health program design needs further exploration. The psychiatry/mental health services is intended to continue to be fully integrated community – hospital program."[5]

1.2.4.2 Eastern Fraser Valley Cancer Centre

The Canadian Association of Provincial Cancer Agencies gathers comparative data on the operational parameters for regional cancer centres. This data (included in Appendix C) shows the BC patterns of practice relative to other Canadian provinces.

Highlights of these comparisons show:

- BC's ratio of new patients to provincial cancer frequency is 0.73 (Canadian range 0.62 - 0.91). This ratio reflects not only patients' ability to access the BC Cancer Agency's services within evidence based standards but also the alternate providers available. (For medical oncology consultation and care, patients may attend a physician in private practice if the specialty is available in their region). The ratio in BC will rise with volume and geographic enhancements such as the opening of the expanded Vancouver Island Cancer Centre and the development of a cancer centre in the Eastern Fraser Valley.
- BC's ratio of radiation therapy new cases to cancer frequency is 0.41 (Canadian range is 0.33 to 0.45). This ratio is a reflection of patient's ability to access radiation oncology consultation and treatment. The benchmark for this ratio is 0.45 and with improved access through system enhancements, BC should reach this standard.

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[5] KPMG. Fraser Valley Project Parameters Review. External Assessment. October 2000.

- BC's ratio of radiation patients per treatment machine is 448 (Canadian range 290-538) BC has the second highest ratio in the country. This is attributable to a combination of operational efficiencies and hours of service.
- Due to the myriad of service options that are available for Systemic Therapy in each of the provinces, comparative data is not well developed. In BC, with the opening of the Cancer Centre for the Southern Interior, approximately 50% of patients who received chemotherapy were seen at the BC Cancer Agency. With impending retirements of community based oncologists and more complex treatments, the Cancer Agency's centres will continue to provide a minimum of 50% of the chemotherapy service requirements in the province.

1.2.5 Review of Costing

The Project Proposal issued in May 2000 addressed the question of what the earlier project (1997) would cost to produce in the year 2000. Certain assumptions were made in the preparation of that proposal.

Planning work undertaken in the development of the Business Case as submitted to the Ministry of Health in October examined space requirements to a higher level of detail than in the May 2000 proposal document. The Facility program has now been used to prepare revised estimates and once again, conventional assumptions have been made for completion of the project five years hence. Reasons for the increase in of total project cost estimates are, generally, as follows.

- The Ministry of Health advised that the number of renal chairs should be increased from 8 chairs in the Project Proposal document to 15 chairs – the cost of this change, including increased area to accommodate the additional chairs has been factored into the business case.
- Equipment requirements have been reassessed and are substantially higher than the costs identified in 1997.
- Costs have been estimated at current prices and have been escalated in this business case, at a rate of 2.25% per annum to the mid-point of construction – this was not the case in the Project Proposal presented in May 2000. The cost of escalation is crucial to successful completion of the project and failure to include this would result in significantly increased financial risk.
- The facility program (final draft January 2001) provides a significantly increased level of detail for all areas of the facility and additional costs have been identified as a result of completion of this study. These costs are in addition to those identified in the Business Case (October 2000), are the result of discussions with Ministry and Treasury Board staff, and are, generally, as follows:
    1. The Project Contingency (based on 2% of the non-construction costs) has been included for the Cancer Centre, this item was excluded in the previous estimate.
    2. Project management fees increased from 2% to 3% to become market-comparable.
    3. A Roof-mounted heliport is now included in the project.
    4. Gross-up factor increased from 1.29 to 1.33 to increase opportunity for innovation in preparation of a master-planning for the site.
    5. Commissioning and move in cost for both the Health and Cancer Centre has been increased from 600,000. to 1.2 million dollars.

1.2.6 Public Private Partnership Opportunities (P3)

Since submission of the Business Case (October 2000), a review of P3 opportunities has been commenced by BCBC. Several functional areas for which funding is not being sought in this Business Case have been programmed for eventual development through public private partnership opportunities. Although identified, but not included in the estimates, the facility program contains detailed requirements for some portion of its ambulatory/outpatient programs as well as regional warehousing, daycare and regional administrative space.

It is anticipated that development of these and other ancillary facilities will be become part of the Master Plan for the site and rezoning opportunities for adjacent properties in the neighbourhood. Approximately two acres of the site will be reserved for this purpose. At this time, only a cursory view of P3 opportunities has been conducted by the project team and material prepared to date has not been included in the business case document (February 2001).

1.2.7 Parking

The design prepared seven years ago required 840 stalls for a 350 bed hospital and up to 1210 stalls for a 500 bed hospital. With the current design now contemplating 300 beds, FVHC alone would now require 725 stalls, EFVCC an additional 175, for a grand total of approximately 900 parking stalls.

When this information was considered during the physical plan review, and later in the master planning session, it was confirmed that if the treed knoll was to remain intact, a maximum of 500 stalls could be accommodated at grade with the remaining cars accommodated in some form of structured parking. Further study of the treed knoll together with an update to the traffic study will need to be undertaken to more accurately determine the number of parking stalls that can be accommodated at grade. Because only the cost of providing non-structured parking is covered under Provincial funding, alternate funding sources for any structured parking will need to be explored in a subsequent phase.

1.3 Summary of Request

A summary of the key information about the request is provided in the following exhibit(s), as requested by the Ministry of Finance and Corporate Relations.

Exhibit 1

Fraser Valley Health Centre
Summary of Request

Date:	**October, 2000**				
Project Title:	**Fraser Valley Health Centre**			Location:	**Abbotsford**
Local Agency:	**Fraser Valley Health Region**			Start Year:	**2005**
Ministry:	**Health**			Project Sponsor:	**Michael Marchbank, CEO**
Total Capital Cost:	**$178,213,700**	Operating Cost (annual):	**$83,305,000**	Contact Person:	**M. Marchbank, CEO** **Phone: (604) 556-5082**
Debt Service (annual):				E-mail:	**michael.marchbank@fvhr.org**

Exhibit 2

Eastern Fraser Valley Cancer Centre
Summary of Request

Date:	October, 2000				
Project Title:	Eastern Fraser Valley Cancer Centre			Location:	Abbotsford
Local Agency:	BC Cancer Agency			Start Year:	2005
Ministry:	Health			Project Sponsor:	Dr. Simon Sutcliffe, CEO
Total Capital Cost:	$32,333,700	Operating Cost (annual):	$10,551,334	Contact Person:	Dr. Simon Sutcliffe, CEO Phone: (604) 877-6104
Debt Service (annual):				E-mail:	ssutclif@bccancer.bc.ca

1.4 Organization of this Document

This document addresses the requirements as described in the "Capital Project Business Case", a handout provided to the Steering Committee on August 9, 2000 by staff from the Ministry of Finance and Corporate Relations. In addition, the Ministry of Health, Health Authority Capital Plan Requirements[6] were considered in completing this Business Case. The organization of the document is shown in the table.

Introduction	This introduction describes the history of the project, process taken to develop the Business Case and a summary of project information.
Demand For Services	Describes the demand for services, the scope of services and alternatives considered.
Management and Governance	This section describes the Management and Governance structures for the project, including value analysis and other measures to evaluate the effectiveness of the management of this project, financing sources, and communications.
Costs and Benefits, Quantitative	Includes the Pre Construction Operating Estimates.
Costs and Benefits, Qualitative	Discusses less tangible costs and benefits to the system.
Performance Measures	Describes the expected performance measures that will be used to evaluate the efficiency and effectiveness of the project relative to the intended improvements in patient care.

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[6] Ministry of Health. Health Authority Capital Plan Requirements. January, 2000.

Risk Management	Identifies potential risks associated with the project and identifies critical risk management strategies.
Implementation Plan	Outlines the proposed approach to the project and provides an overview of the workplan and suggested timelines. This section also highlights the additional work that will take place prior to the approval of project funds in order to ensure comprehensiveness of planning and to avoid any unnecessary delays in advancement.

second bed is closed or the patient is held in the emergency room for extended periods until a bed becomes available.

New programs that will be offered in the FVHC are:

- MRI nuclear medicine;
- full vascular surgery;
- cardiology;
- nephrology/renal; and
- expanded ambulatory programs.

2.1.3 Relevance/Fit with Provincial Policy Goals and the Strategic Plans of the FVHR

The completion of this project will allow the Fraser Valley Health Region to more effectively meet Ministry of Health strategic goals, specifically:

Goal 2	"British Columbians will have access to health care services within an acceptable time period"
Goal 3	"British Columbians will have access to health care services within specified geographic distances"
Goal 4	"British Columbia will have an adequate supply of health care services"
Goal 6	"The health services system will provide consistently high quality health services that improve health and health outcomes, and satisfy British Columbians' expectations"

The need for a new facility that provides a broader scope of regional services is directly linked to the vision, mission and strategic directions of the Fraser Valley Health Region.[10] The Region is significantly hindered in its ability to achieve its goals and objectives because of the current physical plant at the MSA Hospital site.

Completion of a new acute care facility in 2005 will allow the FVHR to provide the necessary access to quality patient care to the residents of the five local health areas as well as to patients in adjoining regions who wish to seek care closer to their home. The hospital is the critical link to continuing service delivery in this community.

The need for a new acute care hospital in Abbotsford is driven by a number of factors:

- the demand for additional inpatient beds to meet the current and future needs of the region;
- the need for additional outpatient capacity for programs provided to the local community;
- the physical plant does not allow the hospital to provide adequate infection control procedures;
- the need to provide new and expanded services within the Region in order to care for drastically more patients rather than trying to access services through the resources available in other regions, specifically in Vancouver;

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[10] Ibid. Appendix D(ii): Vision, Mission and Strategic Directions of the FVHR.

2.0 DEMAND FOR SERVICES

The objective of this project is to build a new 300-bed acute care facility and a Cancer Centre on lands owned by the Fraser Valley Regional Hospital District and by the Province. This section provides information on the following areas:

- demand for services including the relevance and fit with provincial and organizational goals;
- scope of services; and
- alternatives considered.

2.1 Fraser Valley Health Centre

2.1.1 Demographics

Since 1980, the population of Abbotsford has increased 2.4 times to 127,200. For the same period, there has been a growth of about 46% for the regional population (from 132,000 to 243,000). Projections indicate that the regional population will increase by almost 9% (to 267,935) over the next five-year period (2005).

Based on extensive work with the Ministry of Health, an assessment of regional bed requirements indicates the Abbotsford area will need an additional 59 acute care beds by 2004/2005.[7]

2.1.2 Demand for New/Expanded Programs/Services

The growth in population and the increased regional role for the MSA Hospital has surpassed the ability of best utilization practices to influence the demand for acute care beds. As a result there are severe bed shortages in the region.[8] Presently, there are unacceptable wait times for services offered within the region. In addition, there are long wait times for services not provided by FVHR that residents must access in other regions.

The FVHR is currently providing care to about 75% of the acute care cases for the region.[9] This means that up to one quarter of the citizens of the area have to travel elsewhere to find the appropriate care. Many of the patients who receive care outside of the region do so because of the lack of access to programs such as nuclear medicine, cerebral angiography, hemodialysis, higher acuity of trauma surgery requiring ICU back-up, etc.

In addition, referral centres that have been providing care to residents of the FVHR are no longer able to accept patients from the region. The patients treated in the other regions are often the most acute patients and tend to have a longer length of stay. Patients that are referred for a specialized treatment are frequently returned to the FVHR earlier and require additional inpatient care. This situation is compounded by the fact that many of these patients who are very ill require private rooms, which are not available at MSA Hospital. Patients may be placed into semi-private accommodation and the

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[7] Fraser Valley Health Region and BC Cancer Agency. New Fraser Valley Health Centre Abbotsford and Fraser Valley Cancer Centre. Proposal submitted to the Minister of Health, June 2000. Appendix D(i): Regional Bed Calculations.

[8] Ibid.

[9] Ibid. Page 5.

- lack of sufficient numbers of inpatient beds results in delays or inability to provide appropriate access to services, such as:
  - increased surgical wait times due to restricted access for surgical cases requiring an inpatient stay;
  - prolonged stays in the emergency room (ER) and delay in care due to back ups in the ER;
  - lack of sufficient regional inpatient psychiatric beds results in, on average, two admitted psychiatric patients per day being held in ER at MSA Hospital and one in Mission Memorial Hospital;
  - frequent shuffling of patients from room to room is necessary - the current average is 80 transfers a day at MSA Hospital. These patient moves are conducted in order to address the need to separate male and female patients or because of infection control issues. This alone has a great impact on staff time, quality of patient care, and leads to potential workplace injuries and poor morale for staff who are inappropriately deployed to carry out this task.

The acute care long term capital plan (LTCP) for the FVHR requires development and increased capacity at each site in the Region. The bed requirements alone indicate a need for additional space outside of the new FVHC.

The following timeline briefly outlines some of the capital expansion that will be required. All sites need to be running at full capacity with additional capital construction in the future in order to meet the needs of the population. Lastly, the relationship between acute care and long term care capacity cannot be understated. In order for utilization rates to continue to fall and quality of care be maintained, the long term care sector must increase its capital and operating capacity to ensure that acute care facilities are delivering acute care services only.[11]

Exhibit 3

Fraser Valley Health Region
Summary of Long Range Capital Plan – Acute Care

Year	Capital Project
2001 - 2004	Implement plan to evolve programs based on the Regional Clinical Program Plan. Will include renovations at both Mission Memorial Hospital and Chilliwack General Hospital.
2005	New 300 bed acute care facility opened in Abbotsford.
2006 - 2010	Assess need to expand physical plant of Mission Memorial Hospital based on actual population growth and advancements in technology. Continue with redevelopment of Chilliwack General Hospital to replace aged buildings and ensure adequate regional bed numbers.

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[11] Ibid. page 7.

Bed projections were developed for the FVHR based on extensive work with the Ministry of Health. The following table illustrates the bed capacity required at the new hospital and the distribution of the beds within the FVHR.[12]

Exhibit 4

Fraser Valley Health Region
Regional Bed Requirements and Distribution

	2005	2010	2015
Regional Bed Requirements	462	511	569
Proposed Bed Allocater			
Mission Memorial Hospital Site	52	52	52+
Fraser Canyon Hospital Site	16	16	16+
Chilliwack General Hospital Site	133	161[13]	161+
MSA General Hospital Site (presently 202)	261	282	340[14]

2.2 Eastern Fraser Valley Cancer Centre

2.2.1 Impact of Demographics on the Need for Cancer Services

The British Columbia Cancer Agency attempts to optimize patient access to services and provide its services based on a provincial network of services, rather than by local health region planning. Services are currently provided through a Communities Oncology Network and through regional cancer centres located in Vancouver, Surrey, Victoria and Kelowna. There are some delays in access to care in the Lower Mainland.[15] On average, half or 50% of new patient consultations receive service within the standard two-week waiting period. At this time, there are approximately 650 patients waiting for radiation therapy.

Cancer projections for the Lower Mainland show an annual increase of approximately 3% in the numbers of new cancer cases in the community. For the Fraser Valley, the percentage is closer to 3.5%. These projections are based on a regression line developed from 10 years of cancer registry data. It is expected that there will be over 13,000 new cases of cancer reported annually in the FVHR by 2012.[16] The number of people living with cancer (prevalent cases) and requiring continued care from the cancer system is also increasing. There is an expected annual increase by 7% of the overall cancer prevalence rates.

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[12] Ibid. page 8.

[13] Assumes opening 28-bed unit at CGH by 2010.

[14] New hospital will be built to 300-bed capacity. Capacity will need to be developed on other sites in the Region to make up the outstanding 40-beds.

[15] Fraser Valley Health Region and BC Cancer Agency. New Fraser Valley Health Centre Abbotsford and Fraser Valley Cancer Centre. Proposal for submission to the Minister of Health. June 2000. page 8.

[16] Ibid. Appendix D(iii): Cancer Projection Data.

A shift in case-mix and its associated changes in fractionation for radiation therapy patients will also contribute to increasing workloads. Consultations become more extensive and take more time as patients live longer with cancer and the range of services they need to access broadens. Further, it can be expected that as the Provincial Surgical Oncology Program is developed, more patients will be accessing cancer centres for a multidisciplinary oncology consultation prior to their surgery.

The two existing cancer centres in the Lower Mainland, Vancouver Cancer Centre and Fraser Valley Cancer Centre, were designed to accommodate 5,000 and 2,500 new patients respectively. Based on new patient registrations alone, both centres are currently working in excess of their design capacity by about 700 new patients in 1999-2000.[17] However, these measures are now considered inadequate because of the number of prevalent cases and the many disease sites for which multiple treatment modalities are required. The Agency is currently working on a more effective method for quantifying workload projections.

Radiation therapy remains a major form of treatment for cancer and access to care is completely dependent on the capacity of BCCA facilities. In the Lower Mainland there are currently eleven radiation therapy machines. A twelfth machine will be in service at the Fraser Valley Cancer Centre (Surrey, BC) in January 2001. However, the growth in demand for treatment services means that by 2004 the Lower Mainland will already have a shortfall of two treatment machines. Together these factors drive the need for three more treatment machines to be in service by 2004. The demand for radiation therapy alone makes a compelling case for a new centre in Abbotsford.

Medical oncology and chemotherapy workload is growing at a greater rate than any other components of service.[18] Chemotherapy services are provided both within cancer centres and in the community. Projections identify the degree to which future workload might be accommodated in a new cancer centre with a capacity similar to the current Fraser Valley Cancer Centre and the workload that at a minimum will need to be accommodated in the community.[19] The data clearly shows the need for additional comprehensive cancer care facilities in the Fraser Valley. In global terms this means the duplication of the (Surrey) Fraser Valley Cancer Centre, hence, the request for the Eastern Fraser Valley Health Centre services.

As outlined above, there is a need to expand cancer services into the Eastern Fraser Valley. The Cancer Centre requires a host hospital to co-locate in order to provide comprehensive services to patients. The following outlines the nature of the relationship between the Cancer Centre and the host hospital.

2.2.2 Relationship between Cancer Centre and the Fraser Valley Health Region

The BC Cancer Agency currently provides comprehensive cancer care services through four regional cancer treatment facilities and through the Communities Oncology Program that is run in partnership with hospitals in the community. The Vancouver Cancer Centre is the only treatment facility that is self sufficient in terms of clinical and operating support services. The cancer centres in Victoria, Kelowna and Surrey have been designed to allow the cancer centre facilities and staffing to be focused on the oncology speciality services while all the support and general clinical functions are provided through a purchased services arrangement with the "host hospital". This model of a "free standing" cancer centre closely linked to a major hospital has proved to be very effective both in this province and many other centres across Canada.

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[17] Ibid. page 9.

[18] Ibid. page 10.

[19] Ibid.

2.2.3 Relevance/Fit with Provincial Policy Goals and the Strategic Plans of BCCA

A key program objective in the Ministry of Health's Performance Plan[20] is to address the availability and timeliness of cancer care. This objective supports the Ministry of Health Goal 2, that "British Columbians will have access to health care services within an acceptable time period". The performance measures are established and include wait time standards and actual wait times reported for oncology cancer treatment.

The British Columbia Cancer Agency has a provincial mandate to provide population based cancer control services for the residents of British Columbia. The mission of the Agency is threefold:

- to reduce the incidence of cancer;
- to reduce the mortality of people with cancer; and
- to improve the quality of life of those living with cancer.

BCCA supports the objective to provide all British Columbians with access to a high quality of cancer care as close to their homes as possible. The Agency's programs and services are provided in cooperation with its many partners. The programs and services include prevention, early detection, diagnosis and treatment, supportive care, rehabilitation, palliative care, education, research and support for community programs. Given the demand for cancer care in the Province, the development of the Eastern Fraser Valley Cancer Centre means that the BCCA can more effectively meet the needs of British Columbians as well as the need for residents of the Fraser Valley.

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[20] Ministry of Health and Ministry Responsible for Seniors. Performance Plan 2000/2001. British Columbia. April, 2000.

2.3 Scope of Services

2.3.1 Fraser Valley Health Centre

The programs and services to be offered in the FVHC were developed through a formal functional programming exercise. The programs and services will serve the needs of the local Abbotsford community as well as house some of the regional programs. The other hospitals in the region will play similar roles by providing standard services to the community and offering some consolidated regional programs. The Regional Clinical Program Plan provides the detail of the organization of services.

The FVHC will support the following programs:

- general surgery and all subspecialty inpatient surgical services including orthopedics, gynecology, ENT, vascular, plastics;
- general surgery and all subspecialty outpatient surgical services including general surgery, orthopedics, gynecology;
- all specialty adult medical services including nephrology (hemodialysis unit), cardiology (no interventional cardiology planned), neurology, gastroenterology, respirology;
- level II obstetrics with a level II nursery;
- emergency medical services;
- psychiatric services;
- pediatric services (inpatient and outpatient);
- family practice services including geriatric medicine, palliative care, emergency medicine, level I obstetrics, GP pediatrics.

The following table illustrates the inpatient services and programs, proposed bed numbers, assumed occupancies for 2005 for the proposed FVHC site.[21]

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[21] The RPG Partnership. Fraser Valley Health Centre/Eastern Fraser Valley Cancer Centre. Program Definition Report, Program Parameters. August, 2000. Page 1.27.

Exhibit 5

Fraser Valley Health Centre
Bed Summary

	2005			2015		
General Medical/Surgical (including rehab)	132	85	40,953	142	90	46,647
Telemetry	14	85	4,344	16	90	5,256
Surgical Step Down	8	85	2,482	8	85	2,482
Palliative	7	85	2,172	10	90	3,285
Oncology	5	85	1,551	10	90	3,285
ICU/CCU	13	85	4,033	18	85	5,585
Pediatrics	18	60	3,942	18	70	4,599
Obstetrics (including births)	24	61	5,314	28	64	6,541
NICU	7	85	2,172	10	85	3,103
Psychiatry	33	90	10,841	40	90	13,140
TOTAL	261		77,804	300		93,922

Further information about percent occupancy, patient days, and cases is included in the Project Definition Report. The building space summary estimates that 45,693 building gross square metres will be required to support the facility program.

2.3.2 Eastern Fraser Valley Cancer Centre

The Cancer Centre in the Eastern Fraser Valley will provide:

- new patient multidisciplinary consultation and care planning;
- chemotherapy and systemic care;
- access to national and international clinical trials;
- radiation therapy;
- supportive care and pain and symptom management;
- nutritional consultation and support;
- patient and community education in cancer prevention, screening;
- professional education/liaison for community based cancer support and treatment programs.

Exhibit 6

Eastern Fraser Valley Cancer Centre
Workload Volumes

Lower Mainland	**2000**	**2005**	**2015**
Cancer Frequency (New Cases)			
Area 1[22]	5,008	5,545	7,002
Area 2[23]	4,489	5,303	7,358
Northern Region[24]	802	963	1,340
Total	10,299	11,811	15,700
Radiation Therapy			
Total Cancer Cases	10,299	11,811	15,700
Total Fractions	103,216	129,685	197,820
Accelerators Required (10 hour days)	12	14.4	22
Accelerators Available	11	15	22
▪ Vancouver	7	7	8
▪ Surrey	4	5	5
▪ Abbotsford	0	3	4
▪ Other (to be determined)	0	0	5
Eastern Fraser Valley	**2000**	**2005**	**2015**
New Patient Registrations	0	1,300	2,700
Total Patient Appointments	0	30,000	70,000
Total Chemotherapy Visits	0	3480	7,216
Radiation Therapy Fractions	0	27,000	36,000

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[22] Area 1 includes Vancouver, Burnaby, Richmond, North Shore, Coast Garibaldi.

[23] Area 2 includes Fraser Valley, South Fraser, Simon Fraser Health Regions.

[24] Northern Region includes Peace-Liard, Northern Interior and Northwest Interior.

2.4 Alternatives Considered

There have been many alternatives considered throughout the history of the project, such as:

- expansion versus new construction on the existing site;
- existing site versus new site[25] for construction versus alternative site;
- degrees of reuse of existing design work versus complete new design and development of single building versus multi building campus (allowing non post disaster spaces to be provided at a more economical level);
- integration of Cancer Centre into the hospital yet providing a distinct environment for cancer patients and their families;
- provision of specific services in a hospital facility, on a hospital site or in the community and analysis of which community this should be in;
- integration of inpatient and outpatient functions versus grouping of ambulatory functions; and
- procurement alternatives for the construction process.

A brief discussion on each of these considerations is provided below.

2.4.1 Expansion of Existing Site versus New Construction

Potential solutions to the problems associated with the MSA Hospital facility and its ability to support local, regional, and cancer programs were considered in the context of the criteria discussed in Appendix D (iv), and evaluated as a low, medium or high fit. The following options were identified as preferred options over the past 12 years:

Option 1: Maintaining the status quo: Retain the existing structures; continue maintenance on an as needed basis. Do upgrades as permitted within the structure. This was ranked low.

Option 2: Building an 80 bed addition to the current structure: Construct a new expansion onto the existing structure to the west. Upgrades to existing building only in renovated areas. Renovations cannot upgrade existing structures to current standards. This was ranked generally as low-medium.

Option 3: Renovation of existing building and 3 part addition: Construct 3 new expansions to the existing structure to the west, east (after demolition of the 1952 building) and some in fill construction. Upgrades to existing building only in renovated area. Expansion and renovations cannot upgrade existing to current standards as new structures are limited by the physical state of the existing structure. This was ranked generally as low-medium.

Option 4: Construction of a new building on the existing site: Construct a new free-standing structure west of the existing building. Major services over 3 levels (2 levels optimal), new parking structure. Displacement of existing 150 ECU Beds. This was ranked as medium.

Option 5: Construction of a new building on a new site: Construct a new free-standing structure, with expansion capability based on 1993 functional program. This was ranked high.

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[25] New site in this instance refers to the property owned by the Regional Hospital District on Marshall Road in Abbotsford.

2.4.2 Site Alternatives for New Construction

In examining new construction options, the question of site was raised. When the hospital administration began looking for a new site, a study was undertaken to look at what property was available to accommodate the new hospital. The project requires a centrally located site of about 18-25 acres. Three possible options were identified:

- Existing Hospital Property;
- Marshall Road Site;
- McKenzie and King Roads Site.

A summary analysis of the sites is included in the Appendix D(v). As a result of the study, it was concluded that the existing hospital site was not feasible and that of the other two options, the Marshall Road site was the best fit. As the MSA site will provide a type of regional referral for high acuity cases, it is extremely important that there be functional access from Highway #1 and other major feeder arteries. The Marshall Road site provides this level of access.

At this time it is not believed that there is another centrally located piece of land of adequate size in the Abbotsford area that can easily be acquired. For the reasons stated above, it is recommended that new construction proceed on the Marshall Road site.

2.4.3 Reuse of Existing Design and Multi-Building Concept

The following options have been identified and evaluated as potential solutions in the context of the criteria and evaluation described in Appendix F.

Option 1 - Build Original Design and Renovate Once Complete (No BCCA)

This option is based on a 1992 Facility Program. It is a facility that is designed for 300 beds with expansion capable to 400 beds. The site and building design considers potential changes in the high tech medical spaces. The design did not consider the BCCA or the FVHR program requirements with respect to Site Planning, Building Functional or Operational Planning or the design of the Building Systems. Construction of the current design will require updating the design to the current BC Building Code, departmental planning and specification of products and systems. Renovations to the new structure can be very disruptive and costly.

This option appears very attractive at first glance, but it must be noted that it fails to meet one of the nine key requirements of the project, that being to include the development of a cancer centre on this site. It also assumes spending a large amount of capital dollars (not accounted for in this document) on renovations to the interior of the building to accommodate program changes due to regionalization.

Option 2 - Building Original Design and Attach a Cancer Centre

The design for the Hospital, BCCA and FVHR program requirements, current BC Building Code and specification of products and systems would be implemented within the current design configuration. There would be operational and functional compromises in the planning for patients, visitors and staff. The free-standing BCCA structure would displace space currently planned for on-grade parking, thus requiring construction of a parking structure. This option essentially fits a cancer centre on the site without taking into account the functional relationships between the acute care services and the cancer services. It will result in long distances between cancer services and acute services that are regularly accessed by the cancer patient, and inefficient provision of services to the cancer centre.

Option 3 - Redesign, Add Less Costly Building for Some Services and Attach BCCA

The design would be retained including the major planning and building stacking concepts. The Hospital, BCCA and FVHR revised and new program requirements would be implemented. Design of the structure would be completely reworked. The hospital space would be split into Two Occupancy groups. The requirements for building construction can be reduced in space not required to be a Group B Division 2 classification for occupancy. The building area/footprint on site would be reduced permitting the BCCA to become a connected structure to the hospital. Functional and operational relationships can be improved substantially over Option 2. Provision of a parking structure is required. This option rates very closely to Option 4: Complete Redesign, but differs in two areas: reuse of existing design and project schedule. With all other variables being close to equal, and with the functionality of the programs not differing greatly, it makes sense to reuse whatever work is applicable and shorten the length of time to completion.

Option 4 - Complete Redesign (includes Cancer Centre and less costly building for some services):

Complete reprogramming and redesign. This option is the "start from scratch" option that assumes that all work to date is a sunk cost and it is better to begin again. While this may have some appeal in light of the changes that have occurred since 1997, it fails to recognize that most of the conceptual design work that is already complete is very applicable to the new programming. It therefore increases the project planning and design costs and the time to completion.

Recommendation

The recommended solution is Option 3: Redesign, Add Less Costly Building for Some Services and Attach BCCA.

2.4.4 Provision of Cancer Services In a Distinct Environment

There was consideration given to complete integration of the Cancer Program into the hospital environment. Based on extensive discussion, it was agreed that the special circumstance of cancer patients and their families, as well as the fact that, on many of their visits, cancer patients come into the cancer centre, receive their therapy and leave without having to access hospital services, it was not essential that cancer services be integrated into the acute care hospital. This means that a separate patient flow can be achieved with some separation of service. The Cancer Centre still relies heavily on the host hospital for contracted services in many other areas.

2.4.5 Organization of Programs Across Communities

Consideration of appropriate locations of programs was undertaken at the individual program level through the functional programming process as well as at the regional level through the development of the draft Regional Clinical Program Plan.[26]

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[26] DRAFT 1 of the Regional Clinical Program Plan (acute services only) is undergoing phase II of consultation with the Regional Medical Staff and planning is underway to gain community input into the plan. The document is therefore not included as part of this submission.

2.4.6 Organization of Inpatient/Outpatient Programs

Discussions were undertaken at the facility as well as the program level to look at the integration or separation of inpatient programs with their outpatient counterparts (i.e. maternity inpatient to co-locate with outpatient services in maternal care). Due to the operational efficiencies and physical environment impacts, it has been agreed that ambulatory services should be provided out of a central space with sub units that may create somewhat distinct areas for their programming.

2.4.7 Construction Procurement Alternatives

The original project plan for the new acute hospital was to proceed with a single stipulated sum contract. However, this approach may expose the Fraser Valley Health Region and Government to significant risk, since it will only be possible to contract with very large companies due to the project size and complexity.

It is now proposed that the redesigned acute hospital project use a form of construction management to facilitate sequential tendering of project components. This will enable smaller contractors to work on the project and also provide an opportunity for local contractors and suppliers to bid on parts of the work. By pre-qualifying trade contractors and suppliers, and with sequential tendering, opportunities arise through which the schedule can be shortened when compared to the standard stipulated sum tender approach.

The pre-qualification and tendering process will be managed through the Project Team by the construction management firm. In addition to expediting the project schedule, a Construction Management form of contract offers other advantages:

- the Construction Manager becomes part of the Project Team and participates as a partner in the development of the design and coordination of the construction and commissioning processes;
- the Construction Manager is selected by an interview process rather than a bidding process, thereby eliminating inexperienced or inappropriate General Contractors; and
- the Fraser Valley Health Region and British Columbia Cancer Agency have greater control and influence over the management of the project process.

However, since a Construction Management form of contract often has up to 60 individual contract packages, competent and professional project management and administration expertise is essential. Since the Deloitte Consulting Report calls for more rigorous attention to project cost control, performance measurement and tracking, it is critical that the project include the services of independent professional Project Management professionals to form a Project Management Office function. Further discussion and detail to this end is provided in the next section of the Business Case.

3.0 MANAGEMENT AND GOVERNANCE

A project of this magnitude is extremely complex and requires a well developed governance and project management organization and monitoring/audit function to ensure the project is delivered on time, within the budget and with an uncompromised level of quality. The proposed project management controls and structures will be consistent with the capital plan requirements of the Ministry of Health and the capital project requirements of the Ministry of Finance and Corporate Relations. In anticipation of upcoming project phases, BCBC/HSG has undertaken an examination of project delivery options employed on other similar projects recently completed or in progress elsewhere in North America. This information will be used by the Project Steering Committee to help refine the management structure for the Project.

3.1 Project Governance

The project will be governed by a Project Steering Committee and build on the relationships and work accomplished during the development of this Business Case. The Steering Committee will include representatives from the FVHC and BCCA as well as the funders, the Regional Hospital District and the Ministry of Health. The project management function will also be integrated into this group. The responsibilities of the Steering Committee include:

- manage all issues related to scope, schedule and budget;
- advise respective governing bodies of project status;
- provide direction to the Project Management Office;
- monitor the project to ensure project objectives are being met;
- approve past stages and propose for approval next stages to the governing bodies;
- communicate Board and Ministry decisions which have a bearing on the project;
- resolve issues which cannot be resolved within project groups;
- audit and approve presentation of document/project;
- facilitate removal of barriers and obstacles within sphere of influence; and
- ensure compliance with all statutory requirements.

Responsibilities for specific areas of the project plan will be assigned to specific team members through the Project Management Office. The composition of various teams will be reviewed and updated from time to time by the Steering Committee as appropriate.

The following matrix describes the secondary and primary responsibility of Treasury Board, Ministry of Health, FVRD, FVHR, BCCA, BCBC/HSG and the City of Abbotsford.

Exhibit 7

Task Responsibility

Task

Organization	Project Proposal (May, 2000)	Engage Project Manager	Programming Team	Project Initiation and Management	Establish Consulting Team	Program Parameters Definition	Program Value Analysis	Master Program Development	Physical Plan Review	Pre-construction Operating Estimates (PCOE)	Business Case Document	Facility Program Development	Equipment Program (FVHC)	Equipment Program (EFVCC)	Conceptual Planning	Government Approval	Schematic Design	Schematic Design Value Analysis	Green Building Initiative	Design Development (Base Building)	Design Development Value Analysis	Completion Approval (CAR)	Construction Documents (Base Building)	Government Approval	Tender (Base Building)	Construction	Prepare Equipment Tender	Commissioning and Move	Post-occupancy
Treasury Board							S									P		S	S		S	P		P					
Ministry of Finance							S									S		S	S		S	S		P					
Capital Division							S									S		S	S		S	S		P					
Ministry of Health	P	S	S	S	S	S	P	S	S	P		S	P	P		S						S							
Fraser Valley Regional District	S	S					S	S	S			S				S						S							
Fraser Valley Health Region	P	P	P	S	S	P	P	P	P	P	S	P	P	S	P	S	P	S	S	S	S	S	P	P	P	P	P	P	P
BC Cancer Agency	P	P	P	S	S	P	S	P	P	P	S	P	S	P	P	S	P	S	S	S	S	S	P	P	P	P	P	P	P
BCBC/HSG/Project Management Team	S	P	P	P	P	P	S	P	P	S	P	P	S	S	P	S	P	S	P	P	S	S	P	P	P	P	P	P	P
Project Team																													
Planners - The RPG Partnership			P		S	P	S	P	P	S	S	P	S	S	S		S												S
Architect - Architectura/Stantec			S		S			S	P		S	S	S	S	P		P		P	P			P	P	P	P	S	S	P
Cost Consultant - BTY Group	S		S		S		S	S	S		S	S	P	P	S		S	P	S	S	P		S	S	S	S	S		S
Equipment Consultant - CMEC			S		S						S	S	P	P									S			S	P	S	S
Value Analysis Consultants			P		S		P				S							P	S	P	P								
City of Abbotsford																				S									
Planning Department																	S			S				S					
Building Department																	S			S				S		S		S	S
Engineering Department																	S			S				S		S			

3.2 Project Management

The proposed project is unique due to its substantial size and complexity, and because it is a building not a large civil project as so many large capital projects tend to be. Consequently, when considering a project management model for a project of this size one needs to consider how other successful capital projects have been managed and adopt a similar model. Experience indicates that one common characteristic of large successful capital projects is that a comprehensive, multidisciplinary project management team led by an experienced project manager is a key part of the implementation strategy. The project management team usually works in one office and is often located on, or adjacent to, the construction site. Clearly defined roles and responsibilities for the project management team are necessary, with individual responsibility assigned for budget management, schedule management, quality control, contract management, communications and information management, etc.

It is recommended that a Project Management Office (PMO) be established and continue throughout the life of the project. This PMO would include a team of individuals responsible for the timelines, including critical path and task schedules; management of work in progress; budget management and reporting; quality control; issues management; change order process; and internal project communications. Each element of project management is discussed briefly below and followed by a suggested project management structure.

FVHR/FVRHD and BCCA are the Owners of the project and are ultimately responsible for planning and completion of the new facility under terms of a MOU that has been drafted. These organizations, together with representatives from the MoH are active members of the Project Steering Committee to which the Project Manager reports.

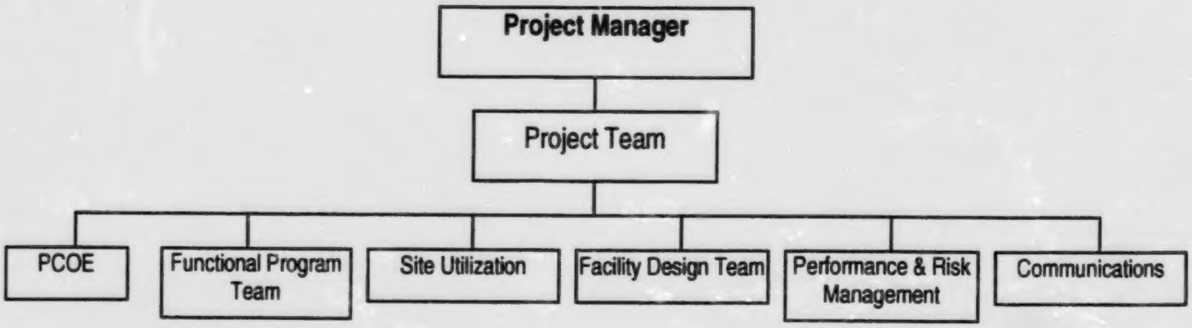
A best practices study is currently underway to outline various means of delivering this facility. Examination of a number of relevant projects in Canada and the US is being undertaken to gain from their experiences. An independent project management organization may be involved to scrutinize procedures.

The PMO will facilitate teams of resources to accomplish project tasks. These teams will deliver the project elements and the PMO will coordinate their integration and ensure acceptable completion.

Specific tasks in the project plan will be assigned to team members, shown in the following exhibit.

Exhibit 8

Fraser Valley Health Centre and Eastern Fraser Valley Cancer Centre
Project Reporting Structure



Curriculum vitae for the current project team members can be found in Appendix F.

3.2.1 Budget Management and Reporting

There is always the concern about construction cost or cost overrun particularly due to the fluctuations in the Canadian dollar and/or inflation which impacts the cost of equipment and other costs. Management and financial controls include:

- financial controls in regards to payments, holdbacks;
- management controls in regards to documentation requirements, timing requirements, compliance with legislation;
- independent reviews including consultants reviews and recommendations; and
- maintaining contingencies.

The size of this project means that extensive budget management will be required to ensure a full appreciation of project implications as decisions are made. The PMO will be responsible for tracking, forecasting and reporting on the budget. The PMO will provide regular updates to the project members and the Steering Committee. The PMO will also be responsible for highlighting budget issues early in the process so that they be resolved and the project risk managed.

3.2.2 Quality Assurance

Quality control will be a key function of the PMO throughout the life of the project. The PMO will participate in the design phases and ensure that the outcomes contribute to the project objectives. The PMO will play a lead role in the value analysis process, working with the funding agencies to achieve the best value for the building life cycle. Throughout construction, the PMO will provide ongoing management of materials and workmanship and ensure that any deficiencies are dealt with in an expedient way.

In addition to required VA sessions, the Steering Committee will undertake to improve integration and operational efficiency of the EFVCC and FVHC through a visioning and review process. This will take place at various milestones through the life cycle of the project. The first of these reviews is scheduled for March, 2001.

3.2.3 Contract Management

Regardless of the procurement method for construction, there will be a significant amount of contract management required on this project. Processes will be established for reviewing and signing contracts, receiving contracted service, assigning responsibility for co-ordinating service contracts, and for maintaining the quality of contracted services. Formal contracts for services to be provided will delineate, at minimum, the following:

- scope of services to be provided;
- qualifications of personnel;
- accountabilities of the firms;
- scheduling commitment and length of contract;
- description of physical facilities and/or equipment to provide the service;
- reporting relationships;

- requirement of the service to comply with legislated and accepted (de facto) standards, regulatory processes and codes;
- requirement that the contractor's policies and processes for the delivery of the service not be in conflict with organizational policies and/or processes;
- financial arrangements;
- liability insurance; and
- licensure and/or registration status of the service, if applicable.

3.2.4 Issues Management

A key element in ensuring the schedule is met, is to have a well-defined and effective issues management process. Issues management will be a key responsibility of the PMO. Issues management includes the following:

- risk identification and monitoring for escalation;
- conflict management;
- risk mitigation strategies such as obtaining insurance, contracts; and
- taking corrective action by revising scopes as required and other remedies.

Web based technologies allow for management and tracking of issues on-line and provide the necessary tools to ensure follow up.

3.2.5 Change Order Process

There will be change orders throughout the life of this project and the successful completion of the project on time, within budget and with the required quality will be dependant on the ability to assess and make decisions on change orders very quickly. The Project Team will require clear guidelines from the Steering Committee on their authority to approve change orders.

3.2.6 Internal Project Communications and Reporting

The PMO will ensure that there is a comprehensive communication process within the project and with the two Owner organizations. The Owner's will manage the external project communication process.

Organized and predictable reporting mechanisms are a critical part of project communications. The PMO will ensure that reporting on progress, delays, issues and dependencies will take place in a timely and reliable manner. The following types of reports may be used: milestone tracking, objective and scope tracking, regular budget reports, master project schedules, schedules, cash flow and regular status reports. Milestone charts that will be used include start and completion dates for the major deliverables, key internal and external reporting requirements, etc. Milestone charts will identify the timing of approval required at each phase.

3.3 Project Schedule

An overall project schedule is provided in Section 8 of this document. This timeline will be expanded into a detailed schedule for the project when the funding is approved. This detailed schedule will be managed by dedicated resources and reported on to the Project Team level, the Steering Committee and the governing and funding agencies (throughout the process).

The goal is to deliver in the least time and within the limits of the resources allocated for the project. Factors that affect the time and costs for this project are:

- Project Management – financial, obtaining information, timely decision making;
- Construction Management – tendering and management of the construction;
- Approvals – provincial and municipal;
- Design – extent of reprogramming, reuse of existing, delivery of documentation.

3.4 Independent Monitoring Process and Evaluation

There are several evaluation techniques for this project as described below:

- project management structure that includes a Project Manager to co-ordinate all aspects of the project work to ensure comprehensiveness and fit between the various parties and activities. This project management approach will include a number of techniques to evaluate and mitigate risk. A key aspect is the documentation procedure and the evaluation of this documentation by the Project Team and the Steering Committee;
- establishment of a Steering Committee and a Project Team charged with the responsibility to put in place appropriate evaluation processes and to report these processes to the respective Boards and Treasury Board through, at a minimum, a monthly report;
- the project management will follow the policies for conducting value analysis (VA) on provincially funded capital projects as described by the Capital Division, Treasury Board staff, Ministry of Finance and Corporate Relations;
- program VA undertaken by independent consultants and by the Ministry of Health staff to review the programs proposed to ensure fit for the community, region and between adjacent regions;
- functional programming and value analysis are combined to provide a comprehensive assessment of the facility requirements;
- independent quantity surveying and cost estimates at key stages;
- use of a risk management approach as described in Section 6 of this business case;
- VA conducted through a design charette or gaming process;
- VA conducted at the schematic design, design development and working drawings stage of the project;
- the Green Guidelines[27] will also be reviewed as part of each VA and individual checklist items will be considered where applicable and appropriate, as additional Standards Value Analysis Proposals (VAPs);[28]
- earned value management – where the work is monitored against what was done;
- planning for a post implementation review; as described in this document under Performance Indicators and as directed by Treasury Board;
- web monitoring and communications strategy to ensure ongoing input, quality assessment; and

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[27] Capital Division, Treasury Board Staff, Ministry of Finance and Corporate Relations, Province of British Columbia. Green Guidelines. June 2000 Edition.

[28] Capital Division, Treasury Board Staff, Ministry of Finance and Corporate Relations. Standard Value Analysis Proposals, Provincially Funded Facilities. June 2000 Edition.

- finally, Treasury Board may reserve the right to appoint a Value Analysis consultant or prescribe a process to be undertaken for evaluation.

3.5 Approval Process

There will be various approval processes in place throughout the course of the project. Overall project approvals will be the responsibility of the Steering Committee. Government approvals will take place in accordance with the Capital Project processes and value analysis. Approvals of a more specific nature in the project will be managed through the Project Management Office and reported at regular intervals throughout the project.

3.6 Legal, Technical and Policy Aspects

The following describes the legal, technical and policy aspects that impact the project. These are limited and are described below.

Exhibit 9

Fraser Valley Health Centre and Eastern Fraser Valley Cancer Centre
Legal, Technical and Policy Aspects

Legislative Requirements	The project will comply with all of the relevant legislation for the hospital and cancer services. Of note is the Hospital Act requirement that there be provision for educational facilities in the hospital.
Labour Issues	The project will create an opportunity for employment of a number of workers at about 10 people per million dollars of construction costs. The pre construction operating estimates show an estimated increase in number of full time equivalents from the MSA Hospital site to the new FVHC/EFVHC of 515.84 (current numbers show an increase from 649.12 to 1,002.72 FTEs). The contractors on the project will be bondable and professional staff will be expected to adhere to the professional standards and codes of conduct. Also, this initiative will require a labour force possessing a relatively high standard of technical qualification and performance. We are assuming that the Fair Wage policy will be in effect.
Aboriginal Affairs	The land is clear of aboriginal land claims.
Green Field Project	The project is relatively unfettered with pre-existing site conditions that could limit the range of development opportunities that are available to the Province.
Gender/Equity Considerations	Not applicable.
Federal/Provincial Relations	Not applicable.
Health Impacts	There will be an increase of 57 acute care beds and an increase of 16,273 patient days. Regional impact – the construction of the new FVHR will allow the Region to provide the necessary access to quality patient care for the residents of the five local health areas as well as to patients in adjoining regions who wish to seek care closer to their home.
Building Code Implications	The construction will comply with Building Code requirements and all other applicable building guidelines.

3.7 Financing Sources

The Cancer Centre will be financed totally by the Ministry of Health (100%). The hospital construction will be financed in part by the Ministry of Health (60%) and by the Fraser Valley Regional Hospital District (FVRHD) (40%), approval in principle to support this project was provided at a meeting of the FVRHD on January 30, 2001. The financing for the structured parking on the site requires further discussion. The Hospital Foundation will also participate in funding portions of the equipment costs for the Health Centre. Other private sector participation may be discussed to develop additional on site services. Full disclosure and discussion with government will be part of the decision making process to this end.

3.8 Communications

The purpose of the Communications Plan is to ensure that the public and key stakeholders understand the concept of the new facility, the rationale for its site and design, and the reasons for the 10-year delay in approval of the project.

Ministries / Agencies Affected:

- Fraser Valley Health Region
- BC Cancer Agency
- Fraser Valley Regional Hospital District
- City of Abbotsford
- Ministry of Health
- BC Buildings Corporation
- Health Services Group
- Ministry of Finance and Corporate Relations (Capital Division)
- Hospital Employees Union, BC Nurses Union and other unions

3.8.1 Communications Objectives

The communications objectives are to ensure that target audiences understand and support the proposed Fraser Valley Health Centre/BC Cancer Agency project, are aware of the planning and cost efficiencies offered by the partners, and believe that the project will be delivered on time and on budget.

3.8.2 Positioning Statement

The following describes the positioning statement as discussed at the Steering Committee meeting:

- while the need for a new hospital in Abbotsford had been recognized for some time, the new realities of health care regionalization in BC required reassessment of plans to update the existing MSA Hospital hospital;
- the project now being proposed for the Fraser Valley Health Centre/Eastern Fraser Valley Cancer Centre takes into account changes in patient volumes, space and equipment needs and operating budget;
- planning a hospital and cancer centre together is new for BC;
- the stakeholders will ensure an innovative, affordable facility, delivered on time and on budget, that meets the Region's needs in the coming years.

3.8.3 Key Messages

- health care renewal is about making best use of health care dollars. To ensure full accountability to taxpayers, the Ministry of Health could not act on the MSA Hospital project until it had reassessed the project in light of the changes brought about by regionalization of health care;
- a review committee representing key stakeholders including the Ministry, the FVHR and the BC Cancer Agency determined that building the FVHC/EFVCC on a new site is the best option.

3.8.4 Secondary Messages

- the current proposal involves planning and development procedures that will ensure best value for the taxpayer's health-care dollar;
- the new facility will benefit from the most advanced technologies;
- the new facility will increase availability of key health services in the communities.

3.8.5 Target Audiences

There are both internal and external audiences who must be given information about this project.

Exhibit 10

**Fraser Valley Health Centre and Eastern Fraser Valley Cancer Centre
Target Audiences**

Internal	External
MOH staff	Health authorities
FVHR board and staff	Industry associations
BCCA board and staff	Health-care service providers / associations
FVRHD board and staff	Advocacy groups
MFCR, Capital Division staff	Unions
BCBC/HSG staff	City and regional governments
	Non-profit organizations
	Media
	MLAs
	General public

3.8.6 Strategies

Three types of strategies are proposed:

- targeted information;
- ongoing communications;
- visual identity.

3.8.6.1 Targeted Information

Some target audiences (e.g., MOH, FVHR, BCCA, FVRHD, BCBC staff) will require overview information; some (e.g., Minister of Health, senior staff or partners, new HSG staff) will require more detailed information; others such as industry groups will be interested only in the next steps.

3.8.6.2 Ongoing Communications

A steady flow of information to the public and key stakeholders will keep them informed of progress. This creates a sense that the project partners are accountable within the stated time frame. HSG will ensure coordination of information among stakeholder organizations.

3.8.6.3 Visual Identity

- recommend use of FVHR, BCCA, FVRHD, BCBC and HSG logos on all print materials;
- communications materials;
- project announcement;
- event: speakers, photo opportunity;
- materials: speaking notes, media release, fact sheet, article, media liaison, interviews;
- sustaining activities;
- select media spokesperson;
- establish media liaison: local media, major Vancouver media;
- progress bulletins: internal - regular, consistent update distributed to BCBC, BCCA, FVRH, FVRHD, MOH, external - regular, consistent update to media, key stakeholders;
- project milestones: opportunities to create greater awareness;
- project visuals, photo opportunities for demonstrating construction efficiencies;
- budget;
- design and production of bulletin (including banner);
- other contracted services as needed;
- evaluation.

3.8.7 Evaluation of Communication Strategies

The following table provides examples of evaluation activities that will be undertaken.

Exhibit 11

Fraser Valley Health Centre and Eastern Fraser Valley Cancer Centre
Evaluation of Communication Strategies

Activity	Responsibility
Monitor and evaluate media coverage	HSG/MOH/FVHR/BCCA
Use HSG website and communication network for Q/A and feedback	HSG
Monitor stakeholder/industry publications	HSG/MOH/FVHR/BCCA
Correspondence – respond to feedback from public, industry, stakeholders	HSG/MOH/FVHR/BCCA

4.0 COSTS AND BENEFITS – QUANTITATIVE

4.1 Methodology for the Development of the Pre-construction Operating Estimate (PCOE)

The hospital PCOE is estimated based on phase 1 programming decisions. It is anticipated that the PCOE amount will need to be adjusted based on the final facility programming decisions.

The PCOE is set up to identify the workload volumes, FTE, salary and benefits, supply and total costs projected for an anticipated opening in 2005. The workload volumes, FTE and total costs are provided for the planned operation of the 2000/01 fiscal year. The total proposed change is provided for each of these categories. The document is sectioned by major clinical, diagnostic and support categories with totals provided for each section. The revenue section identifies the expected revenue changes related to the projected volumes for 2005.

The costs were developed wherever possible by determining the worked hour to volumes. The worked hour to volume relationship was reviewed against the original submission, current operations, other hospital data, and available staffing guidelines. The Ministry of Health provided the initial cost for the renal program. The renal costs have been escalated for the 2000/01 contract cost changes. Overall salaries have been costed at the 2000/01 rates inclusive of contract changes. Benefits were costed at 19.5 percent of salaries. Supplies were costed using the 2000/01 budgeted rate per volume of activity for the individual areas.

Although a start-up PCOE has been identified for the EFVCC this activity has not yet been completed for the FVHC.

4.1.1 Program/Service Assumptions

Volumes for the program and service functions identified in the PCOE are estimated on projected service needs at 2005 and not on service capacities.

The self-sufficiency rate used for all volume projections is 85%. The current self-sufficiency level, with the exception of surgery, is assumed to be 75%. Surgery is 63.4%.

- only programs and services relating directly to the function of the new facility have been included in the PCOE;
- two additional telemetry and six additional surgical step down beds have been included at eight worked hours per patient day. The telemetry beds are required to manage the volumes and surgical step down beds are required to manage complex surgical cases such as vascular surgery;
- five beds have been identified to manage surgical cancer cases. The number of cancer beds may change based on the results of the Okanagan-Similkameen study;[29]
- the Operating Room (OR) inpatient and surgical day care cases are based on a self-sufficiency rate of 85%. The current rate for the region is 63.4%. Therefore, OR volumes for 2005 have been

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[29] The Okanagan-Similkameen Health Region is currently working on two years of operational data to determine the impact of the Southern Interior Cancer Centre (CCSI) on Kelowna General Hospital. It is anticipated that the assumptions used for the Cancer Clinic volumes in the current PCOE will need to be adjusted based on this study.

estimated at 11,850 cases. The result is projected 4,450 inpatient cases and 7,400 surgical day care cases;

- the projected births for 2005 at MSA Hospital are 1,800 with a projected average length of stay (ALOS) of 2.93 days per birth. The 2.93 ALOS allows for antepartum and postpartum cases with complications. The patient days are projected to be 5,274;
- endoscopy cases are currently done in the OR suite and are reported as outpatient cases. In the new facility these cases are planned, along with minor surgery cases, to be done in a separate area in ambulatory care. The projected combined cases are 6,885;
- new programs included in the PCOE are vascular surgery, pacemaker implants, renal dialysis, nuclear medicine and MRI imaging;
- the admitting service in the new facility will be decentralized to the clinical program areas. For the purposes of the PCOE the admitting costs have been shown as a constant over the time frame.

4.2 PCOE Summary

The major volume or size changes included in the PCOE are summarized in the following table:

Exhibit 12

Major Volume or Size Changes Included in the PCOE

Summary of Volume Changes	2000/01 Budget	2005 Projected	Percent Increase
Beds	204	261	27.9
Patient Days	59,464	77,804	30.8
OR Visits	7,100	11,850	66.9
Emergency Visits	42,000	50,369	19.9
Ambulatory Care Clinic Visits	11,838	22,430	89.5
Laboratory Units	2,768,179	4,375,163	58.0
Medical Imaging Units	2,323,630	3,042,208	30.9
Building Square Meters	18,000	45,693	254.0

The Pre Construction Operating Estimate is summarized as follows:

The total Net Pre Construction Operating Estimate is	$83,305,100
The 2000/01 Operating Budget (before approval of expected 'rollover' requirement is	$46,400,907
PCOE change	**$36,904,193**

Exhibit 13

Fraser Valley Health Centre Pre Construction Operating Estimate

FRASER VALLEY HEALTH CENTRE
PRE CONSTRUCTION OPERATING ESTIMATE
January 2001 Update for Treasury

Priced in 2000 Dollars

		Estimate 2005								2000/2001 Budget						PCOE Change from 2000/2001 Budget					
			Statistics			Staffing					Statistics			Staffing							
																Total Change Proposed					
	Department/Area	**Beds**	**% Occ.**	**Activity**		**FTE's**	**Salaries**	**Supplies**	**Total PCOE**	**Beds**	**% Occ.**	**Activity**		**FTE's**	**Total Cost**	**Beds**	**% Occ.**	**Activity**		**FTE's**	**Total Cost**
A)	Inpatient Units																				
	Med/Surg Units (includes Rehab)	132	85	40,953	patient days	141.50	8,289,361	1,056,219	9,345,580	118	86	36,960	patient days	117.77	7,712,905	14	(1)	3,993	patient days	23.73	1,632,675
	Telemetry	14	85	4,344	patient days	22.01	1,410,076	112,023	1,522,099	12	83	3,656	patient days	10.24	701,401	2	2	688	patient days	11.77	820,698
	Surgical Step Down	8	85	2,482	patient days	22.19	1,421,155	64,014	1,485,169							8	85	2,482	patient days	22.19	1,485,169
	Palliative Care Unit	7	85	2,172	patient days	10.68	631,372	56,012	687,384	0		0	patient days			7	85	2,172	patient days	10.68	687,384
	Cancer	5	85	1,551	patient days	6.40	383,838	79,003	462,841	0		0	patient days			5	85	1,551	patient days	6.40	462,841
	Intensive Care/Coronary Care Units	13	85	4,033	patient days	60.22	3,869,077	535,454	4,404,531	10	57	2,064	patient days	22.42	1,760,429	3	28	1,969	patient days	37.80	2,644,102
	Pediatrics	18	60	3,942	patient days	20.81	1,290,958	150,186	1,441,144	18	60	3,969	patient days	15.38	1,095,929	0	(0)	(27)	patient days	5.43	345,215
	Obstetrics/Labour & Delivery	24	61	5,314	patient days	41.31	2,604,150	317,876	2,922,026	21	56	4,300	patient days	29.18	2,083,141	3	5	1,014	patient days	12.13	838,885
	Obstetrics/Labour & Delivery			1,800	births							1,478	Births					322	Births		
	Neonatal Intensive Care Unit	7	85	2,172	patient days	17.20	1,097,961	29,556	1,127,519	5	81	1,480	patient days	12.32	801,058	2	4	692	patient days	4.88	326,461
	Psychiatry	33	90	10,841	patient days	48.72	2,943,459	239,319	3,182,778	20	96	7,035	patient days	19.26	1,315,690	13	(6)	3,806	patient days	29.46	1,867,088
	Supervisors/Porters/Floats					21.01	1,184,161	0	1,184,161					9.40	657,653					11.61	526,508
	Total Inpatient Units	***261***		***77,804***	**patient days**	***412.05***	***25,125,568***	***2,639,664***	***27,765,232***	***204***		***59,464***	**patient days**	***235.97***	***16,128,207***	***57***		***18,340***	**patient days**	***176.08***	***11,637,026***
B)	Surgical Inpatient and Day Care																				
	Operating Rooms			7.5	suites							4	suites					3.5	suites		
	O.R.			11,850	cases	41.99	2,493,291	2,810,491	5,303,782			7,100	cases	27.77	3,513,776			4,750	cases	14.22	1,790,006
	P.A.C.U.			20,145	hours	28.21	1,794,257	123,467	1,917,724			7,450	hours	9.44	655,313			12,695	hours	18.77	1,262,411
	Surgical Day Care Unit			6,956	cases	15.26	908,614	116,594	1,025,208			3,131	cases	5.92	401,272			3,825	cases	9.34	623,936
	Total Surgical Inpatient and Day CareSurgical					**85.46**	**5,196,162**	**3,050,552**	**8,246,714**					**43.13**	**4,570,361**					**42.33**	**3,676,353**
C)	Emergency Services			50,369	visits	82.20	5,004,153	715,645	5,719,798			42,000	visits	44.81	3,314,229			8,369	visits	37.39	2,405,569
D)	New Clinical Programs																				
	Renal Program			70	patients			3,581,458	3,581,458									70	patients		3,581,458
	Vascular Surgery Program ***Marginal Cost Increase***			296	cases			443,066	443,066									296	cases		443,066
	Pacemakers (implant supply)			210	implants			525,000	525,000									210	implants		525,000
	Nuclear Medicine			332,500	units	7.25	423,067	594,776	1,017,843									332,500	units	7.25	1,017,843
	Magnetic Resonance Imaging			2,500	exams	6.55	424,401	306,113	730,514									2,500	exams	6.55	730,514
	Total Cost of New Programs					**13.80**	**847,468**	**5,450,413**	**6,297,881**											**13.80**	**6,297,881**
E)	Ambulatory Care Services																				
	Cardiology (ECG)			513,917	units	3.02	148,836	198,676	347,514			396,359	units	2.36	275,488			117,558	units	0.66	72,026
	Respiratory			451,561	units	9.73	744,380	276,264	1,020,644			215,933	units	4.01	433,840			235,628	units	5.72	586,804
	EEG/EMG			102,428	units	1.31	68,349	34,770	103,119			60,840	units	0.88	67,140			41,588	units	0.43	35,979
	Ambulatory Care Clinics			22,430	visits	18.94	1,287,694	339,404	1,627,098			11,838	visits	6.65	565,714			10,592	visits	12.29	1,061,384
	Pre-Admission Clinic			8,295	visits	5.50	317,207	2,500	319,707			7,107	OR Cases	2.70	147,283			1,188	OR Cases	2.80	172,424
	Diabetic Day Care			4,000	visits	3.30	192,461	12,120	204,581			2,700	visits	1.02	58,224			1,300	visits	2.28	146,357
	Psychiatric Day Care			2,500	attendences	6.16	357,663	7,567	365,230			1,076	attendances	5.03	295,627			1,424	attendances	1.13	69,603
	Infection Control					1.00	71,118	1,000	72,118					0.50	35,560					0.50	36,558
	Endoscopy (includes recovering 110 imaging cases)			7,200	cases	17.34	1,026,426	1,211,899	2,238,325					2.32	150,000			7,200	cases	15.02	2,088,325
	Total Ambulatory Care					**66.30**	**4,214,136**	**2,084,200**	**6,298,336**					**25.47**	**2,028,876**					**40.83**	**4,269,460**
F)	Other Community Programs																				
	Palliative Care Outpatient					1.81	118,574	156,039	274,612					1.81	274,612					0	0
	Enhanced Care Management					7.82	504,525	193,215	697,740					7.82	697,739					0	0
	IV Home Therapy					0.74	49,025	52,550	101,575					0.74	101,575					0	0
	Sexual Assault Nurse Examiner					0.28	18,501	0	18,501					0.28	18,501					0	(0)
	Psych After Hours Program					5.41	368,789	24,915	393,704					5.41	393,704					0	(0)
	Total Other Community Programs					**16.06**	**1,059,413**	**426,719**	**1,486,132**					**16.06**	**1,486,131**					**0**	**0**
G)	Diagnostic Services																				
	Laboratory			4,375,163	units	57.16	3,348,250	2,229,748	5,577,998			2,768,179	units	50.88	4,513,760			1,606,984	units	6.28	1,064,238
	Medical Imaging																				
	Xray:			1,793,327	units	29.19	1,732,740	959,509	2,692,249			1,370,435	units	21.00	1,964,430			422,892	units	8.19	727,819
	Ultrasound:			853,755	units	8.19	590,869	499,945	1,090,814			642,655	units	6.12	829,960			211,100	units	2.07	260,854
	CT Scan			395,126	units	3.80	278,314	939,637	1,217,951			310,540	units	2.98	826,456			84,586	units	0.82	391,495
	Pharmacy			77,803	patient days	33.28	2,185,369	126,000	2,311,369			59,464	patient days	19.73	1,417,831			18,339	patient days	13.55	893,538
	Total Diagnostic Services					**131.62**	**8,135,542**	**4,754,839**	**12,890,361**			5,151,273		**100.71**	**9,552,438**					**30.91**	**3,337,943**
H)	Rehabilitation Services																				

Fraser Valley Health Centre Pre Construction Operating Estimate

FRASER VALLEY HEALTH CENTRE
PRE CONSTRUCTION OPERATING ESTIMATE
January 2001 Update for Treasury

Priced in 2000 Dollars

	Estimate 2005								2000/2001 Budget						PCOE Change from 2000/2001 Budget					
		Statistics			*Staffing*				*Statistics*				*Staffing*		**Total Change Proposed**					
Department/Area	**Beds**	**% Occ.**	**Activity**		**FTE's**	**Salaries**	**Supplies**	**Total PCOE**	**Beds**	**% Occ**	**Activity**		**FTE's**	**Total Cost**	**Beds**	**% Occ.**	**Activity**		**FTE's**	**Total Cost**
Physiotherapy/Occupational Therapy			29,300	attendences	11.91	744,447	13,156	757,603			16,770	attendance	9.81	623,455			12,530	attendance	2.10	134,148
Social Services					8.20	509,302	0	509,302					4.51	280,121					3.69	229,181
Spiritual Care Services			77,803	patient days	1.50	93,938	1,500	95,438			59,464	patient days	1.00	63,555			18,339	patient days	0.50	31,883
Total Rehabilitation Services					21.61	1,347,687	14,656	1,362,343					15.32	987,131					6.29	395,212
I) Support Services																				
C.P.D.					19.60	939,079	129,350	1,068,429					10.50	596,116					9.10	472,313
Material Management					10.36	467,495	13,178	480,673					5.90	276,349					4.46	204,324
Biomedical Engineering					3.00	180,083	118,892	298,975					1.50	181,261					1.50	117,714
Food Services			170,213	meal days	66.89	2,956,229	990,317	3,946,546			150,559	meal days	51.25	3,078,439			19,654	meal days	15.64	868,107
Clinical Nutrition			422,640	units	4.79	299,187	0	299,187			351,745	units	3.90	243,209			70,895	units	0.89	55,978
Plant Maintenance/Services			45,830	m2	29.40	1,587,859	1,827,510	3,415,369			18,000	m2	11.48	1,518,506			27,830	m2	17.92	1,896,863
Security			45,830	m2	11.10	367,682	17,694	385,376			18,000	m2	5.65	255,189			27,830	m2	5.45	130,187
Housekeeping			45,830	m2	62.69	2,767,197	472,498	3,239,695			18,000	m2	32.53	1,607,648			27,830	m2	30.16	1,632,047
Laundry/Linen			1,859,022	pounds	3.36	138,217	1,061,074	1,199,291			1,172,210	pounds	1.60	553,507			686,812	pounds	1.76	645,784
Health Records					21.27	1,030,649	85,967	1,122,616					16.74	883,103					4.53	239,513
Admitting					23.30	1,056,618	130,673	1,187,291					23.48	1,163,654					(0.18)	23,637
Hospital Information Services (marginal increase)					3.50	235,991	430,000	665,991					-	0					3.50	665,991
Human Resources (marginal increase)					1.00	57,869	0	57,869					-	0					1.00	57,869
Total Support Services					260.26	12,090,155	5,277,153	17,367,308					164.53	10,356,981					95.73	7,010,327
J) Administration					5.00	325,751	45,626	371,377					5.00	371,377					0.00	(0)
Total Expenditures					*1094.36*	*63,346,035*	*24,459,467*	*87,805,502*					*651.00*	*48,775,731*					*443.36*	*39,029,771*
Revenue:																				
Cardiology (ECG)								(98,925)						(93,000)						(5,925)
Respiratory								(66,243)						(31,500)						(34,743)
Electroencephalgraphy (EMG)								(43,950)						(33,900)						(10,050)
Nuclear Medicine								(247,770)						0						(247,770)
CT Scan								(393,520)						(312,600)						(80,920)
Nutrition Services								(600,000)						(280,000)						(320,000)
Laboratory								(500,300)						(430,650)						(69,650)
Imaging - Xray								(746,780)						(574,400)						(172,380)
Ultrasound								(822,149)						(629,475)						(192,674)
General Inpatient/Outpatient								(1,079,690)						(970,270)						(109,420)
Total Revenue								*(4,500,402)*						*(3,262,795)*						*(1,243,532)*
Total PCOE					*1094.36*	*63,346,035*	*24,459,467*	*83,305,100*					*651.00*	*45,512,936*					*443.36*	*37,786,239*

Exhibit 14

BC Cancer Agency - Eastern Fraser Valley Cancer Centre (EFVCC) Staffing

BC Cancer Agency - Eastern Fraser Valley Cancer Centre (EFVCC) Staffing

				EFVCC Start-up- Staffing					Year 1		Full Capaci	
Department Code	Department Description	Occ code	Position	Total FTEs	Number of Months	Total FTE Months	Monthly Rate	Total Dollars	Total FTE's	$s	Total FTE's	$s
Rad Therapy Program												
7135057-06	Rad Therapy-Assessment	21001	Reg Nurse	4.90	1.50	7.35	4,144	30,456	4.90	243,646	6.56	326,167
		21003	Module Leader	1.00	4.00	4.00	4,524	18,097	1.00	54,290	1.00	54,290
		15305	Nurse Assistant	1.69	1.50	2.54	3,235	8,202	1.66	65,613	2.00	77,649
		72502	RT	-		-		-				
		10104	Unit clerk	2.25	1.50	3.38	3,035	10,242	2.25	81,934	4.50	163,868
		10311	Process Secretary	0.25	1.00	0.25	3,362	840	0.25	10,086	0.25	10,086
		10311	Medical Secretary	1.56	1.00	1.56	3,362	5,245	1.56	62,935	3.12	125,869
7135057-06	**Subtotal**			11.65		19.07		73,081	11.65	518,503	17.43	757,949
7142020-06	Rad Therapy-Treatment	17261	Process Leader	1.00	12.00	12.00	6,573	78,876	1.00	78,876	1.00	78,876
		72504	Module Leader/Chief	1.00	4.00	4.00	5,539	22,156	1.00	66,467	1.00	66,467
		72536	Resource Therapist	2.00	3.00	6.00	5,126	30,755	2.00	123,019	2.00	123,019
		72502	RT	13.00	1.50	19.50	4,848	94,543	13.00	756,340	18.00	1,047,241
		10311	Process Ldr. Secretary	0.50	12.00	6.00	3,362	20,171	0.50	20,171	0.50	20,171
		10311	Process Secretary	0.50	1.00	0.50	3,362	1,681	0.50	20,171	0.50	20,171
		72503	RT Educ,Dev,Practice	1.00	3.00	3.00	5,140	15,419	1.00	61,675	1.00	61,675
		10002	Clerk 4 (RT Booking)	3.00	1.50	4.50	3,035	13,656	3.00	109,245	4.00	145,661
		10002	Clerk 4 (Film Room Recep)	2.25	1.50	3.38	3,035	10,242	2.25	81,934	3.00	109,245
7142020-06	**Subtotal**			24.25		58.88		287,498	24.25	1,317,900	31.00	1,672,527
7142030-06	Physics - Planning	01506	Module Leader-Physicist	1.00	12.00	12.00	8,708	104,491	1.00	104,491	1.00	104,491
		72536	Resource Therapist	2.00	3.00	6.00	5,126	30,755	2.00	123,019	2.00	123,019
		72502	RT	8.00	1.50	12.00	4,848	58,180	8.00	465,440	11.00	639,980
		72524	Phys Asst	1.25	8.00	10.00	4,545	45,445	1.25	68,168	1.50	81,802
		72515	RT Tech 1	2.20	8.00	17.60	4,770	83,953	2.20	125,929	2.60	148,825
		10311	Secretary	0.50	12.00	6.00	3,362	20,171	0.50	20,171	0.50	20,171
		18305	Tool/Die Maker	1.50	8.00	12.00	3,953	47,439	1.50	71,158	1.50	71,158
		01502	Physicist 2	3.00	8.00	24.00	6,726	161,415	3.00	242,123	4.00	322,831
		01503	Physicist 3	2.00	8.00	16.00	8,708	139,322	2.00	208,983	2.00	208,983
7142030-06	**Subtotal**			21.45		115.60		691,171	21.45	1,429,483	26.10	1,721,260
Rad Therapy Program Total				57.35		193.55		1,051,750	57.35	3,265,886	74.53	4,151,736
Systemic Therapy Program												
7135020-06	Ambulatory Chemo	21001	Registered Nurse	1.76	1.00	1.76	4,150	7,304	1.76	87,646	3.32	165,332
		10311	Secretary	0.50	1.00	0.50	3,362	1,681	0.50	20,171	0.50	20,171
		10104	Unit Clerk	1.16	1.00	1.16	3,035	3,520	1.67	60,813	1.13	41,149
7142020-06	**Subtotal**			3.42		3.42		12,505	3.93	168,631	4.95	22
7135055-06	Ambulatory Oncology	10104	Unit Clerk	1.83	1.00	1.83	3,035	5,553	1.83	66,640	4.93	17
		10322	Clerk 5	1.00	1.00	1.00	3,310	3,310	1.00	39,717	1.00	39
7135055-06	**Subtotal**			2.83		2.83		8,863	2.83	106,357	5.93	219,244
7135056-06	Ambulatory Care Unit	17262	Process Leader	1.00	12.00	12.00	5,958	71,496	1.00	71,496	1.00	71,496
		17297	Clinical Nurse Leader	1.00	3.00	3.00	5,596	16,789	1.00	67,154	1.00	67,154
		21001	Registered Nurse	2.40	1.00	2.40	4,144	9,945	2.40	119,337	4.87	242,154
		10311	Secretary	0.25	1.00	0.25	3,362	840	1.00	40,343	1.00	40,343
		10311	Medical Secretary	1.54	1.00	1.54	3,362	5,177	1.54	62,126	3.19	128,693
7135056-06	**Subtotal**			6.19		19.19		104,247	6.94	360,457	11.06	549,840
7144010-06	Pharmacy	36100	Pharmacist	0.93	13.00	12.09	4,787	57,878	1.00	57,447	2.42	139,022
		15402	Pharmacist Ast	1.93	1.00	1.93	3,434	6,628	1.93	79,537	2.22	91,488
		36400	Pharmacist 4	1.00	13.00	13.00	6,192	80,496	0.93	69,102	1.00	74,304
		10311	Secretary	0.50	3.00	1.50	3,362	5,043	0.50	20,171	0.50	20,171
7144010-06	**Subtotal**			4.36		28.52		150,044	4.36	226,258	6.14	324,985
Systemic Therapy Program Total				16.80		53.96		275,659	18.06	861,702	28.08	1,320,721
Administration												
7119010-06	PIM	10311	Secretary	0.56	1.00	0.56	3,362	1,883	0.56	22,592	0.56	22,592
		31600	Chief HRA	1.00	4.00	4.00	5,140	20,558	1.00	61,675	1.00	61,675
		31100	HRA 1	1.00	1.00	1.00	3,954	3,954	1.50	71,175	2.00	94,900
		10604	Health Records Tech	1.00	1.50	1.50	3,172	4,758	1.75	66,614	2.25	85,646
		10603	Med Steno 1	2.00	2.00	4.00	3,087	12,348	3.00	111,128	4.56	168,915
		10602	Clerk 3	3.00	2.00	6.00	2,826	16,955	4.00	135,641	6.00	203,461
		10606	Med Steno Sup	-	-	-	2,826	-	-	-	-	-
		10313	Clerk 6 Supervisor	-	-	-	2,826	-	-	-	-	-
		10604	New Patient Referral Clk	1.00	1.50	1.50	3,035	4,552	2.00	72,830	2.50	91,038
7119010-06	**Subtotal**			9.56		18.56		65,008	13.81	541,655	18.87	728,227
7111010-06	Admin/Regional	01400	Regional VP			-	17,958	-	-	-	-	-
		17260	Regional Operations Ldr			-	6,461	-	-	-	-	-
		17286	Exec Secretaries			-	3,852	-	-	-	-	-
		10311	Secretary			-		-		-		-
		10304	Reception	1.20	1.00	1.20	2,815	3,378	1.60	60,804	1.60	60,804
		23002	Infection Control Nurse	0.20	1.00	0.20	4,701	940	0.20	11,282	0.20	11,282
		21002	Clinical Trials Nurse			-		-		-		-
		31100	Clinical Trials HRA	-	-	-	3,954	-	1.00	47,450	1.00	47,450
		17301	Administration Ast	1.00	8.00	8.00	3,852	30,818	1.50	69,341	1.50	69,341
		10212	Accounting Clerk 5	1.00	1.00	1.00	3,310	3,310	1.20	47,660	1.20	47,660
7111010-06	**Subtotal**			3.40		10.40		38,446	5.70	236,537	5.70	236,5
7111010-06	Provincial Positions	10512	Programming	1.00	6.00	6.00	4,718	28,310	1.00	56,620	1.00	5
		10514	IT Support	1.00	6.00	6.00	3,771	22,626	1.00	45,251	1.00	4
		17250	HR Consultant	1.00	6.00	6.00	5[illegible]95	33,571	1.00	67,142	1.00	67,1
7111010-06	**Subtotal**			3.00		18.00		84,507	3.00	169,014	3.00	169,014
7146310-06	Dentistry	36100	Dentist	0.40	1.00	0.40	16,291	6,517	0.40	78,198	1.00	195,496

BC Cancer Agency - Eastern Fraser Valley Cancer Centre (EFVCC) Staffing

BC Cancer Agency - Eastern Fraser Valley Cancer Centre (EFVCC) Staffing

Department Code	Department Description	Occ code	Position	EFVCC Start-up- Staffing					Year 1		Full Capacity	
				Total FTEs	Number of Months	Total FTE Months	Monthly Rate	Total Dollars	Total FTE's	$s	Total FTE's	$s
		72526	Dental Hygienist	-	-	-		-		-		-
		15402	CDA	0.40	2.00	0.80	3,156	2,524	0.40	15,146	1.00	37,868
7146310-06	**Subtotal**			0.80		1.20		9,041	0.80	93,345	2.00	233,361
Administration Total				16.76		48.16		197,002	23.31	1,040,551	29.57	1,367,140
Cancer Control Strategy Program												
7181010-06	Library	10322	Library Tech	0.50	1.00	0.50	3,309	1,654	0.50	19,854	0.50	19,854
7181010-06	**Subtotal**			0.50		0.50		1,654	0.50	19,854	0.50	19,854
	Medical Media	14004	Medical Media Support	0.50	1.00	0.50	3,699	1,850	0.50	22,194	0.50	22,194
	Subtotal			0.50		0.50		1,850	0.50	22,194	0.50	22,194
7119062-08	Provincial Position	31200	HR2 Adm 2 (Data Manag)	0.50	1.00	0.50	4,270	2,135	0.50	25,623	0.50	25,623
7119062-08	**Subtotal**			0.50		0.50		2,135	0.50	25,623	0.50	25,623
7177010-08	Provincial Position	72501	Genetic Counsellor	0.25	2.00	0.50	4,873	2,437	0.25	14,620	0.25	14,620
7177010-08	**Subtotal**			0.25		0.50		2,437	0.25	14,620	0.25	14,620
Cancer Control Strategy Program Total				1.75		2.00		8,076	1.75	82,291	1.75	82,291
Cancer Care Process Program												
7199010-06		17299	Chaplain	0.50	1.00	0.50	5,595	2,798	0.50	33,571	0.50	33,571
7199010-06	**Subtotal**			0.50		0.50		2,798	0.50	33,571	0.50	33,571
7135011-06	Pain & Sympt Man	36100	Pharmacist	0.20	1.00	0.20	4,787	957	0.20	11,489	0.20	11,489
		21001	RN	0.30	2.00	0.60	4,150	2,490	0.30	14,940	0.30	14,940
7135011-06	**Subtotal**			0.50		0.80		3,447	0.50	26,429	0.50	26,429
7147010-06	P& F Counseling	50500	Social Worker 4 (PPL)	1.00	2.00	2.00	5,539	11,078	1.00	66,467	1.00	66,467
		50200	Social Worker 1b	1.00	2.00	2.00	4,953	9,907	2.50	148,598	3.90	231,81
		41200	Art Therapy	-	-	-	4,606	-	0.10	5,527	0.20	11,05
		40200	Music Therapy	-	-	-	4,606	-	0.10	5,527	0.40	22,107
		10311	Secretary (Shared P&F & Nut)	1.00	2.00	2.00	3,362	6,724	1.00	40,343	1.50	60,514
7147010-06	**Subtotal**			3.00		6.00		27,708	4.70	266,461	7.00	391,954
7144510-06	Clinical Nutrition	30100	Dietician	-	-	-	4,606	-	0.60	33,160	1.40	77,374
		30300	Dietician 3 (PPL)	1.00	2.00	2.00	5,140	10,279	1.00	61,675	1.00	61,675
7144510-06	**Subtotal**			1.00		2.00		10,279	1.60	94,836	2.40	139,050
7144910-08	Rehab Network	17304	Volunteer Co-ordinator	0.50	1.00	0.50	3,571	1,785	0.50	21,424	0.50	21,424
	(Provincial Position)					-		-		-		-
7144910-08	**Subtotal**			0.50	1.00	0.50		1,785	0.50	21,424	0.50	21,424
7125010-06	Nursing Admin	22003	Reg Nurse Leader (PPL)	1.00	2.00	2.00	4,704	9,409	1.00	56,451	1.00	56,451
	(Provincial Position)					-		-		-		-
7125010-08	**Subtotal**			1.00		2.00		9,409	1.00	56,451	1.00	56,451
Cancer Care Process Program Total				6.50		11.80		55,426	8.80	499,172	11.90	668,879
Total Dollars								1,587,913		5,749,602		7,590,766
Total Relief								212,780		770,447		1,017,163
Total Benefits								360,139		1,304,010		1,721,586
Total Staffing				-	-	-		2,160,832		7,824,058		10,329,515
Total FTE Months						309.47						
Total FTE's				99.16					109.27		145.83	

Relief Percentage	13.40%

Benefits Percentage:

Medical	12.00%
Non-Medical	20.00%

Workload ratios are based on Agency standards

BC Cancer Agency - Eastern Fraser Valley Cancer Centre (EFVCC) Staffing

Department Code	Department Description	Occ code	Position	EFVCC Start-up- Staffing					Year 1		Full Capacity	
				Total FTEs	Number of Months	Total FTE Months	Monthly Rate	Total Dollars	Total FTE's	$s	Total FTE's	$s
MSP												
Rad Therapy Program (MSP)												
7030720-06	Radiation Oncology	90108	Rad Oncologist	4.68	3.00	14.04	17,917	251,550	4.68	1,006,200	9.36	2,012,400
Rad Therapy Program Total (MSP)				4.68	3.00	14.04		251,550	4.68	1,006,200	9.36	2,012,400
Systemic Therapy Program (MSP)												
7030730-06	Medical Oncology	90117	Med Oncologist	4.00	3.00	12.00	17,917	215,004	4.00	860,000	8.25	1,773,750
Systemic Therapy Program Total (MSP)				4.00	3.00	12.00		215,004	4.00	860,000	8.25	1,773,750
Total Dollars (MSP)								466,554		1,866,200		3,786,150
Total Benefits (MSP)								55,986		223,944		454,338
Total Staffing (MSP)				-	-	-		522,540		2,090,144		4,240,488
Total FTE Months (MSP)						26.04						
Number of FTE's (MSP)				8.68					8.68		17.61	

Relief Percentage	13.40%
Benefits Percentage	
Medical	12.00%
Non-Medical	20.00%

Exhibit 15

BC Cancer Agency - Eastern Fraser Valley Cancer Centre (EFVCC)
Facility Summary
For Start-Up, Year 1 and Full Capacity

Item			Start-up	Year 1	Full Capacity
	No. of Accelerators			3	4
	Full Admits			1,300	2,700
	RT Completed Courses			1,475	1,967
	Visits	RT Consults		1,131	2,262
		RT Follow Ups		4,040	8,080
		RT Pt Review		5,400	7,200
		Fractions		27,000	36,000
		ST Consults		520	1,073
		ST Follow Ups		3,120	6,438
		Chemo Visits		3,488	7,216
		New Chemo		218	451
		Pain & Symptom		288	288
		Hereditary		120	120
	Total Visits		-	45,325	69,128
Item	Description				
1	Salaries & Benefits		1,948,052	7,053,611	9,312,352
	Relief		212,780	770,447	1,017,163
	Total HCD Salaries		2,160,832	7,824,058	10,329,515
2	MSP Salaries - Medical		466,554	1,866,200	3,786,150
	Benefits @	12.00%	55,986	223,944	454,338
	Total MSP Compensation		522,540	2,090,144	4,240,488

For information only, not included in total at bottom

Item	Description	Start-up	Year 1	Full Capacity
3	Stationery	29,773	68,087	84,444
4	Linen / Laundry	3,999	7,313	9,108
5	Plant Operations (Utilities)	40,000	80,000	92,000
6	Plant Maintenance	-	3,019	4,025
7	Medical & Surgical Supplies	72,138	124,673	144,330
8	Dispensing Supplies	1,922	8,328	10,202
9	Lab Supplies	220	686	905
10	Radiology Supplies	13,285	42,866	57,155
11	Physics Supplies	34,000	32,775	43,700
12	Books	12,800	7,079	8,133
13	Journals	108	431	575
14	Education Supplies	14,325	3,965	5,009
15	General Supplies	8,442	25,861	34,377
16	Postage	850	2,600	2,600
17	Courier	2,674	14,342	17,992
18	Long Distance	4,800	16,000	16,000
19	Line Rental / Lease	8,567	28,725	29,053
20	Telephone-Variable Charges	1,071	3,308	3,527
21	Telephone-Paging Servies	200	600	600
22	Patient transportation	500	1,294	1,725
23	Travel-Local	1,387	4,009	4,191
24	Travel - Interclinic	11,427	24,088	25,105
25	Travel- Convention	32,134	78,155	115,010
26	Staff Development	1,146	7,034	9,962
27	PEA-Medical	10,700	44,092	90,370
28	PEA-Scientist	5,196	7,200	8,400
29	Education -Other	30,000	-	-
30	Data Comm Network Service	350	1,000	1,000
31	Software Purchase/Dev	1,000	1,000	1,000
32	Office Products-Rentals/Lease	8,429	52,001	78,150
33	Consultant-General	-	10,000	10,000
34	Other Prof Fees & Exp	-	10,000	10,000
35	Recruitment/Advertising	988,741	-	-
36	Fees-Memberships	1,238	4,500	4,928
37	Fees-Accreditation	254	1,100	1,348
38	Insurance	4,000	4,000	4,000
39	Other Admin	400	1,200	1,200
40	Eqt Mtnc Contract	-	-	204,875
41	Eqt Mtnc-Part/Labr-Excl Radiot	-	10,125	13,500
42	Minor equipment	3,000	36,150	95,071
43	Purchased Services-Hospital (Excluding Utilities)	125,000	1,943,670	2,818,000
44	Purchased Services-Other	1,000	2,000	2,000
45	Purchased Services-Dental	-	14,000	19,000
	Total Non-Staffing	1,475,076	2,727,276	4,082,569

Total Staffing & Non Staffing	3,635,908	10,551,334	14,412,083

Exhibit 16

BC Cancer Agency - Eastern Fraser Valley Cancer Centre
Startup Budget - Purchased Services From Host Hospital

	EFVCC	EFVCC	EFVCC
	Startup	Year 1	Full Capacity
Biomedical Engineering	5,000	10,000	24,000
Cardiac Diagnostics		670	1,000
Diagnostic Imaging		725,000	1,100,000
Ground Maintenance	10,000	30,000	30,000
Housekeeping/Waste Management	50,000	150,000	200,000
Laboratory		600,000	900,000
Laundry/Linen		40,000	60,000
Materials Management	5,000	50,000	75,000
Medical Day Care	30,000	43,000	65,000
Occupational Health		20,000	20,000
Patient Portering		13,000	20,000
PICC Lines		20,000	30,000
Plant Maintenance		130,000	150,000
Respiratory Therapy		2,000	3,000
Security	25,000	50,000	50,000
Speech & Language Therapy		40,000	60,000
Translator Program		20,000	30,000
SUBTOTAL	125,000	1,943,670	2,818,000
Plant Operation, Utilities	40,000	80,000	92,000
TOTAL	165,000	2,023,670	2,910,000

4.3 Capital Cost Summary

INTRODUCTION

The Pre-schematic Design Estimate is intended to provide a realistic assessment of the direct and indirect construction cost of the New Fraser Valley Health Centre and Eastern Fraser Valley Cancer Centre.

Estimated costs are based on the Functional Space Requirements Report, dated September 2000, prepared by the RPG Partnership, and the Functional Relationship Diagrams prepared by Architectura in association with Stantec Architects.

The estimate does not represent the low bid price that will be submitted at the time of tendering. Our estimate represents a fair and reasonable value (average) based on the program information and analysis of the previous project cost for the Health Centre and Kelowna Cancer Centre project.

Appropriate unit rates have been used in conjunction with the planned program areas to arrive at an estimated cost for the overall construction cost.

Site requirements have been costed based on a combination of the previous site plan and the proposed site development.

AREAS

The gross floor area of the building as per Facility program document are as follows:

• Fraser Valley Health Centre	45,693 m^2
• Eastern Fraser Valley Cancer Centre	7,110 m^2

ESCALATION AND PRICING

The estimate has been priced at current rates taking into account the size and nature of the project. The unit rates utilized are considered competitive for a project of this type bid under a stipulated lump sum form of tender in an open market with a minimum of five (5) bids and constructed within a normal time frame.

- The escalation allowance is based on a two and one quarter percent (2.25%) per annum rate, compounded to the midpoint of the anticipated construction schedule.

The schedule is based on the following assumptions:

• Design and Documentation	18 months
• Construction (forty two months – escalation taken to midpoint)	21 months

In the event that the above schedule alters, the escalation allowance should be adjusted accordingly.

SCOPE

The following items are specifically excluded from the estimate:

- Land acquisition costs
- Legal costs
- Contaminated soils review

Taxes – The estimate includes the Provincial Sales Tax (PST) where applicable. The Federal Goods and Services Tax (GST) is included as the Payable amount for Health Care Projects.

CONTINGENCIES

A design contingency of 5% has been included in the construction estimate to cover program modifications, unknown or unique design requirements due to the complexity of the building and site conditions.

A construction contingency of 2% has been included in the estimate to cover orders during construction.

An Escalation contingency of 7.5% has been included to cover inflation based on the schedule and rates noted in Section No. 4.

1553 and Project Cost Summary/Construction Cost Estimate

Province of
British Columbia

Ministry of Finance
and Corporate Relations
Capital Division

PROJECT COST
ESTIMATE
(1553)

1	FACILITY **FRASER VALLEY HEALTH CENTRE & EASTERN FRASER VALLEY CANCER**	LOCATION **ABBOTSFORD,BC**	STATUS ☐ Approval-in-principle ☐ Design Development ☐ Post-tender ☐ Facilities Program ☐ Contract Document ☐ Revision ☑ Schematic Design ☐ Pre-tender ☐ Wrap-up
2	PROJECT **HEALTH and CANCER CENTRE**		
3	PROJECT NUMBER 0	2-Feb-01 YR 2001 MTH FEB DAY 15	EST'D COMPLETION YR 2005 MTH FEB DAY 15

	CATEGORY	NEW CONSTRUCTION	RENOVATIONS	REIMBURSABLES	GST	TOTAL CURRENT ESTIMATE	TREASURY BOARD APPROVAL	VARIANCE (> 0 = OVERRUN, < 0 = UNDERRUN)
4	BUILDING CONSTRUCTION	115,433,200	-	[redacted]	8,080,300	123,513,500	-	123,513,500
5	SITE DEVELOPMENT	6,549,400	-	[redacted]	458,500	7,007,900	-	7,007,900
6	SUPPLEMENTARY BUILDING COSTS	-	-	[redacted]	-	-	-	-
7	SUPPLEMENTARY SITE COSTS	3,857,600	-	[redacted]	270,000	4,127,600	-	4,127,600
8	CONSTRUCTION CONTINGENCY	2,338,000	-	[redacted]	163,700	2,501,700	-	2,501,700
9	ARCHITECT (FEES)	7,244,700	-	-	507,100	7,751,800	-	7,751,800
10	STRUCTURAL ENGINEER (FEES)	1,423,000	-	-	99,600	1,522,600		1,522,600
11	MECHANICAL ENGINEER (FEES)	2,598,900	-	-	181,900	2,780,800	-	2,780,800
12	ELECTRICAL ENGINEER (FEES)	1,387,700	-	-	97,100	1,484,800	-	1,484,800
13	QUANTITY SURVEYOR/VA (FEES)	466,900	-	-	32,700	499,600	-	499,600
14	DIETARY CONSULTANT (FEES)	100,000	-	-	7,000	107,000	-	107,000
15	LANDSCAPE ARCHITECT (FEES)	188,000	-	-	13,200	201,200	-	201,200
16	INTERIOR DESIGNER (FEES)	144,100	-	-	10,100	154,200	-	154,200
17	EQUIPMENT CONSULTANT (FEES)	200,000	-	-	14,000	214,000	-	214,000
18	OTHER CONSULTANTS (FEES)	1,890,000	-	-	132,300	2,022,300	-	2,022,300
19	TESTING (In Construction)	-			-	-	-	-
20	VA PROCESS (FEES)	450,000			31,500	481,500	-	481,500
21	PROJECT MANAGEMENT	3,845,300			269,200	4,114,500	-	4,114,500
22	ADMINISTRATION COSTS	1,125,000			78,800	1,203,800	-	1,203,800
23	PRIOR COMMITMENTS(Planning Fees)	1,000,000			70,000	1,070,000	-	1,070,000
24	LAND / SITE COSTS	-			-	-	-	-
25	LOCAL GOVT / UTILITIES / OFF SITE	1,589,600			111,300	1,700,900	-	1,700,900
26	OTHER COSTS	1,475,400			103,300	1,578,700	-	1,578,700
27	EQUIPMENT / FURNISHINGS	53,198,000			3,723,900	56,921,900	-	56,921,900
28	PROJECT CONTINGENCY	2% 1,566,500			109,700	1,676,200		1,676,200
29	GST REBATE			83% x	14,565,200	(12,089,100)	-	(12,089,100)
30	OTHER CONTRIBUTIONS			-		-	-	-
31	**TOTAL PROJECT COST**					210,547,400	-	210,547,400

OPERATING COST (first full year) = $.

FOR [illegible] USE ONLY					
FUNDING SOURCES				DISTRIBUTION	
C.O.A	AMOUNT	SH	MSH	[illegible]	☐
				[illegible]	☐
				[illegible]	☐
				[illegible]	☐
				ADMIN	☐

CERTIFIED CORRECT:

FACILITY / HA / SD SIGNING AUTHORITY DATE

APPROVED

PROJECT MANAGER DATE

MANAGER, PROJECT DELIVERY DATE

PROJECT COST SUMMARY	**FVHC**	**FVCC**	**TOTAL**
A. LAND COST			-
Land	-		
Legal Fees	-		
B. CONSTRUCTION	**$114,050,900**	**$14,127,300**	**$128,178,200**
Building	89,853,400	12,270,500	
On Site Work Costs	3,993,800	-	
Off Site Work Costs	1,800,500	-	
Supplementary Building Costs	-		
Supplementary Site Costs	3,412,900		
Design Contingency (Design & Program Changes)	4,953,000	613,500	
Construction Contingency (Changes During Construction)	2,080,300	257,700	
Escalation Contingency (Cost Escalation to Mid-Point of Construction)	7,957,000	985,600	
C. PROFESSIONAL FEES	**$13,505,000**	**$2,043,400**	**$15,548,400**
Programming	220,000	30,000	
Architectectural	6,421,100	823,600	
Structural	1,140,500	282,500	
Mechanical	2,281,000	317,900	
Electrical	1,140,500	247,200	
Quantity Surveying	387,800	79,100	
Acoustic	50,000	10,000	
Equipment Consultant	200,000	-	
Code	50,000	10,000	
Elevator Consultant	50,000	10,000	
Energy Analysis	100,000	20,000	
Dietary Consultant	100,000	-	
Geotechnical	50,000	10,000	
Interior Design & Signage	114,100	30,000	
Landscape	159,700	28,300	
Surveying	40,000	10,000	
Value Analysis	400,000	50,000	
Wind Study	30,000	-	
Disbursements	570,300	84,800	
D. FURNISHINGS & EQUIPMENT	**$39,198,000**	**$14,000,000**	**$53,198,000**
Medical Equipment	35,698,000	14,000,000	
Dietary Equipment	3,000,000	-	
Communications Equipment (telephone switch)	500,000	-	
E. MUNICIPAL & CONNECTION FEES	**$1,405,600**	**$184,000**	**$1,589,600**
Development Cost Charges	721,300	99,200	
Building Permits	684,300	84,800	
F. MANAGEMENT & OVERHEAD	**$6,741,400**	**$1,249,200**	**$7,990,600**
Project Management Fee	3,421,500	423,800	
Owners Planning and Administrative Cost	720,000	405,000	
Project Insurance	729,900	90,400	
Project Commissioning, Move-In	1,000,000	200,000	
Prior Commitments (Planning Costs)	870,000	130,000	
G. PROJECT CONTINGENCY 2%	**$1,217,000**	**$349,500**	**$1,566,500**
H. PAYABLE GOODS AND SERVICES TAX	**$2,095,800**	**$380,300**	**$2,476,100**
I. TOTAL PROJECT COST	**$178,213,700**	**$32,333,700**	**$210,547,400**

CONSTRUCTION COST ESTIMATE

Buildings		
Fraser Valley Health Centre	45,693	89,853,400
Eastern Fraser Valley Cancer Centre	7,110	12,270,500
Subtotal Buildings		**102,123,900**
Site		
On Site Costs		3,993,800
Off Site Costs		1,800,500
Subtotal Site		**5,794,300**
Supplemtanry Building		
Supplementary Building Costs		0
Subtotal Supplementary Building		**0**
Supplemtanry Site		
Supplementary Site Costs		3,412,900
Subtotal Supplementary Site		**3,412,900**
Subtotal Construction Costs		**111,331,100**
Design Contingency	5.0%	5,566,600
Construction Contingency	2.0%	2,338,000
Escalation Contingency	7.5%	8,942,700
Total Construction Costs		**128,178,400**

CONSTRUCTION COST ESTIMATE
BUILDING SPACE SUMMARY

Service Group		Quantity	Unit	Rate	Amount
A High/Medium Serviced Facilities (Post Disaster)					
A1	General Medical/Surgical Inpatient Units	5,961	m2	1,900.00	11,325,900
A2	Maternal Child Program	3,429	m2	1,800.00	6,172,200
A3	Mental Health/Psychiatry Program	2,285	m2	2,000.00	4,570,000
A4	Palliative Care Unit	676	m2	1,750.00	1,183,000
A5	Critical Care Units (ICU/CCU/SSDU)	1,930	m2	2,460.00	4,747,800
A6	Emergency	1,461	m2	1,800.00	2,629,800
A7	Surgical Suite	1,754	m2	2,790.00	4,893,700
A8	Medical Imaging	2,463	m2	2,350.00	5,788,100
A9	Laboratory Medicine	1,345	m2	2,575.00	3,463,400
A10	Morgue/Autopsy	146	m2	2,200.00	321,200
A11	Biomedical Engineering	332	m2	1,700.00	564,400
Subtotal Component Area, A		**21,782**	**m2**	**2,096.20**	**45,659,500**
B Low Serviced Facilities (Post Disaster)					
B1	Surgical Day Care/Same Day Admit	618	m2	2,460.00	1,520,300
B2	General Day Care	879	m2	2,460.00	2,162,300
B3	Diagonistic Services Centre	809	m2	2,350.00	1,901,200
B4	Pharmacy	689	m2	2,250.00	1,550,300
B5	Health Information Management	1,007	m2	1,700.00	1,711,900
B6	Volunteers/Auxiliary Services	101	m2	1,600.00	161,600
B7	Spiritual Care Services	89	m2	1,600.00	142,400
B8	Main Entry Facilities	329	m2	1,700.00	559,300
Subtotal Component Area, B		**4,521**	**m2**	**2,147.60**	**9,709,300**
C Low Serviced Facilities (Non-Post Disaster)					
C1	Wellness Centre		m2	1,600.00	
C2	Outpatient Clinics		m2	1,690.00	
C1	Ambulatory Care Centre	1,433	m2	1,900.00	2,722,700
C3	Pre-Admission Clinic		m2	1,690.00	
C4	Rehabilitation Services	453	m2	1,900.00	860,700
C5	Site Administration	433	m2	1,700.00	736,100
C6	Education Facilities	791	m2	1,600.00	1,265,600
C7	Renal Dialysis Unit	809	m2	1,800.00	1,456,200
Subtotal Component Area, C		**3,919**	**m2**	**1,796.71**	**7,041,300**

CONSTRUCTION COST ESTIMATE
BUILDING SPACE SUMMARY

	Service Group	Quantity	Unit	Rate	Amount
D	**Industrial/Shop Facilities (Post Disaster)**				
D1	Nutrition and Food Services	2,127	m2	1,800.00	3,828,600
D2	Material Services	1,098	m2	1,750.00	1,921,500
D3	Ambulance Station	(460)	m2	1,400.00	(644,000)
Subtotal Component Area, D		**3,225**	**m2**	**1,782.98**	**5,750,100**
E	**Industrial/Shop Facilities (Non-Post Disaster)**				
E1	Plant Services	431	m2	1,690.00	728,400
E2	Linen/Housekeeping Services	439	m2	1,650.00	724,400
E3	Central Staff Facilities	300	m2	1,885.00	565,500
Subtotal Component Area, E		**1,170**	**m2**	**1,725.04**	**2,018,300**
F	**Regional/Other Facilities (Non-Post Disaster)**				
F1	Regional Administration	(1,746)	m2	1,500.00	(2,619,000)
F2	Regional Material Services (Warehouse)	(1,897)	m2	1,400.00	(2,655,800)
F3	Child Day Care Facility	(200)	m2	1,800.00	(360,000)
Subtotal Component Area, F		**(3,843)**	**m2**	**1,466.25**	**(5,634,800)**
Total Component Gross Area		**34,617**	**m2**	**2,027.28**	**70,178,500**
Unassigned Gross Area (Incl. Mech., ext. wall, major circulation, etc.)		10,385	m2	1,700.00	17,654,700
Public Links/Corridors		691	m2	2,200.00	1,520,200
Helipad		1	sum	500,000.00	500,000
TOTAL EFVCC BUILDING GROSS AREA		**45,693**	**m2**	**1,966.45**	**89,853,400**

Notes:

1 *Areas in brackets have not been included in the Total Component Gross Area, the Total Building Gross Area or the Construction Costs*

2 *Net to Gross Factor/Ratio (CGSM to BGSM)* *1.32*

CONSTRUCTION COST ESTIMATE
BUILDING SPACE SUMMARY

Service Group		Quantity	Unit	Rate	Amount
G High/Medium Serviced Facilities (Non-Post Disaster)					
G1	Radiation Therapy Area	1,420	m2	2,400.00	3,408,000
G2	Clinical Physics	730	m2	1,600.00	1,168,000
G3	Dentistry	54	m2	1,650.00	89,100
Subtotal Component Area, G		**2,204**	**m2**	**2,116.65**	**4,665,100**
H Low Serviced Facilities (Non-Post Disaster)					
H1	Entry Facilities	225	m2	1,600.00	360,000
H2	Patient Resources	65	m2	1,500.00	97,500
H3	Patient Counselling	240	m2	1,500.00	360,000
H4	General Clinic Area	915	m2	1,650.00	1,509,800
H5	Systemic Therapy Area	290	m2	1,700.00	493,000
H6	Pharmacy	135	m2	1,650.00	222,800
H7	Clinical Trials Office	105	m2	1,650.00	173,300
H8	Medical Staff Offices	660	m2	1,500.00	990,000
H9	Patient Information Management	415	m2	1,650.00	684,800
H10	Administration	155	m2	1,500.00	232,500
H11	Staff Support	145	m2	1,500.00	217,500
H12	Clinic Support	160	m2	1,500.00	240,000
Subtotal Component Area, H		**3,510**	**m2**	**1,590.09**	**5,581,200**
Total Component Gross Area		**5,714**	**m2**	**1,793.19**	**10,246,300**
Unassigned Gross Area (Incl. Mech., ext wall, major circulation, etc.) (25%)		1,396	m2	1,450.00	2,024,200
TOTAL EFVCC BUILDING GROSS AREA		**7,110**	**m2**	**1,725.81**	**12,270,500**

1 Net to Gross Factor/Ratio (CGSM to BGSM) *1.24*

CONSTRUCTION COST ESTIMATE

Service Group	Quantity	Unit	Rate	Amount
On Site Development				
Site Clearance	95,723	m2	1.00	95,700
Asphalt Paving	36,449	m2	30.00	1,093,500
Concrete Walkways and Ramps	1,039	m2	55.00	57,100
Concrete Stairs & Bridges	1	sum	150,000.00	150,000
Fencing to Oxygen Storage Tanks	30	m	150.00	4,500
Exterior Signage	1	sum	80,000.00	80,000
Site Furnishings	1	sum	50,000.00	50,000
Parking Control Boothe	2	no	15,000.00	30,000
Parking Lot Controls	4	no	25,000.00	100,000
Parking Entry and Exit Gates	4	no	6,000.00	24,000
Soft Landscaping	1	sum	500,000.00	500,000
Mechanical Site Services Sanitary, Storm, Water & Gas	1	sum	799,100.00	799,100
Electrical Site Services Telephone, Cable, High Voltage U/G duct, Site Lighting and	1	sum	567,400.00	567,400
Demolition	1	sum	100,000.00	100,000
General Requirements and Fee - 12%				438,200
TOTAL ON SITE DEVELOPMENT				**3,993,800**

CONSTRUCTION COST ESTIMATE

Service Group	Quantity	Unit	Rate	Amount
Off Site Development				
BC Hydro Charges	1	sum	805,000.00	805,000
Telus Charges	1	sum	201,300.00	201,300
Cable Television	1	sum	10,000.00	10,000
Civil Work to Gladwin and Marshall	1	sum	591,300.00	591,300
General Requirements and Fee - 12%				192,900
TOTAL OFF SITE DEVELOPMENT				**1,800,500**
Supplementary Site Costs				
Cut and Fill	203,471	m2	8.00	1,627,800
Retaining Walls	2,109	m2	250.00	527,300
Mechanical Site Services Underground Retention	1	sum	374,600.00	374,600
Electrical Site Services Dual Feeder for Hydro Service	1	sum	517,500.00	517,500
General Requirements and Fee - 12%				365,700
TOTAL SUPPLEMENTARY SITE COSTS				**3,412,900**

5.0 COSTS AND BENEFITS – QUALITATIVE

5.1 Non-Financial Outcomes

In addition to financial measurement of costs and benefits, there are non-financial aspects to be taken into account for this project. Although listed as non-financial, many of these items do in fact have an impact on the bottom line. This includes:

- a new facility and equipment will attract care providers to the region. This is a critical part of the delivery of services to residents;
- capacity to do higher volume of cases in the facility. This will reduce wait times for services to the residents. There will be the ability to handle the projected volumes in the program;
- new and expanded programming will facilitate repatriation of patients currently being cared for in other regions;
- ability to integrate new technologies and to continue the inclusion of less invasive techniques into patient care. This will result in reduced hospital stays for inpatient care and increase day care procedures;
- reductions in closed beds due to isolation requirements. Currently with a very limited capacity to isolate in the current facility, isolation requirements result in closure of other beds within the room;
- the project will create work in the community. It is estimated that the construction will produce on average about 10 people per million dollars of construction;
- the new environment created in the new centre will improve the working environment and increase the productivity of staff. The facility will allow operational functioning as expected in the plan;
- it is expected that there will be a reduction in the requirement of transferring up to 80 patients a day and hence, the potential for injuries to staff will be reduced and staff will be better deployed to provide patient care;
- there will be fewer labour issues as a nurse will be less involved in transferring patients and furniture, which is considered a non-nursing duty;
- the increase in the number of single rooms will increase the healing capacity for patients;
- the BCCA statistics indicate that BC has the best statistics for cancer control in Canada. With the new equipment and the ability to address wait times more effectively, the BCCA performance will be benchmarked with other countries for comparison;
- the facility will be built on budget to the functional planning assumptions.

6.0 PERFORMANCE MEASURES

The objective of this section is to identify quantitative performance measures against which the outcomes of the expenditure will be measured in future years.

Performance measures can be used in two ways:

- to compare performance of the facility with other facilities or health authorities, and
- to compare changes in performance over time within the facility.

Benchmarking helps the organization to discover and understand new ideas and methods to improve processes and practices and to identify aggressive, yet achievable future performance targets. The following factors need to be taken into consideration when analyzing performance results either between health authorities or between years of performance in the Region:

- population growth and ageing;
- trends in need for care;
- continued improvement in inpatient utilization;
- increased patient intensity;
- increased self sufficiency or interdependence on other regions for services;
- availability of community resources and supports; and
- delays in the ability to transfer patients who require care elsewhere.

The Fraser Valley Health Region and BCCA will establish baseline performance indicator information and identify the data collection process. The MOH currently conducts regular Peer Group Comparisons and this information is shared with the health authorities.

6.1 Hospital Performance Measures

The following measures can be used to benchmark performance between health authorities:

- standardized separation rate/1000 population;
- standardized patient day rate/1000 population;
- alternate level of care days/1000 population;
- average length of stay;
- referral patterns – are residents leaving to seek services that are not offered in the Region? How many are leaving etc? Is the region receiving patients from other regions and for what reasons?
- cost – what is the current cost per weighted case?[30]

The following measures can be used to benchmark performance within a facility:

- standardized separation rate/1000 population;
- standardized patient day rate/1000 population;
- alternate level of care days/1000 population;
- average length of stay;

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[30] Ministry of Health. Health Authority Capital Plan Requirements. January 2000.

- infection control rates;
- ratio of daycare (ambulatory) spaces to inpatient spaces;
- changes in waitlist;
- bed occupancy;
- patient moves in a 24 hour period;
- number of people on surgical waiting list;
- percentage of elective surgery performed as day surgery;
- percentage of elective surgery admission on day of procedure;
- elective surgical waiting time;
- percentage of elective surgery cancellations;
- percentage of cases that are day surgery;
- number of patients on waiting lists per speciality;
- cancellation rates for day surgery;
- surgical site infections;
- post-surgical complication rate;
- equipment failures;
- mortality;
- morbidity;
- re-admission rate;
- surgical volume.

There are several areas in particular that will be closely monitored for their outcomes in this project, as follows:

- the ability to reach the repatriation of residents targets of 90% or higher capture of non-surgical cases and 85% of surgical service demand by 2010, increasing to 90% or higher in most services by 2015;
- the ability to reduce ALC patients to 7% by 2005, down from a current level of approximately 12% at the MSA Hospital site. Future targets are 5% by 2010 and 3% by 2015;
- the ability to consolidate selected elective services for the region at Mission Memorial Hospital and Chilliwack General Hospital;
- the ability to attract and retain staff to provide the specialized services required for the future;
- the effectiveness of the strategies to manage the needs of seniors and the strategies to programming ambulatory care;
- the effectiveness of the psychiatry/mental health program design to ensure a fully integrated community – hospital program. The success of off-site locations and ability to successfully pursue "P3" construction opportunities on the FVHC site for some portion of the psychiatry/mental health ambulatory/outpatient programs.

6.2 Canadian Council on Health Services Accreditation

The Canadian Council on Health Services Accreditation (CCHSA) is the national accreditation organization for health services in Canada. Although participation in the accreditation process is voluntary, both the Fraser Valley Health Region and the British Columbia Cancer Agency have participated in ongoing accreditation processes.

CCHSA introduced the Client-Centred Accreditation Program in 1995 that included the principles of quality improvement into the accreditation standards and the survey process. As part of this focus on quality improvement, health service organizations must develop and monitor performance indicators as part of their efforts to improve the quality of their care and service. The development of organization wide performance indicators brings a coordinated approach to measurement and provides the mechanism that allows organizations to focus their quality improvement activities and to monitor the effects of implementing one or more changes to their processes.[31] Quality has been described according to eight dimensions: effectiveness, appropriateness, efficiency, accessibility, acceptability, safety, competence, and continuity. These dimensions are described below.[32]

Effectiveness:	Care/service interventions or actions achieve the desired results.
Appropriateness:	Care/services are relevant to the patient/client's needs and based on established standards.
Efficiency:	Achieving the desired results with the most cost-effective use of resources.
Accessibility:	The ability of the patient/client to obtain care/service at the right place and at the right time, based on respective needs.
Acceptability:	All care/services provided meet the expectations of the patient/client, community, providers, and paying organizations, recognizing that there may be conflicting or competing interests between stakeholders, and that the needs of the patient/client are paramount.
Competence:	An individual's knowledge and skills are appropriate to the care/services being provided.
Safety:	Potential risks of an intervention or the environment are avoided or minimized.
Continuity:	The ability to provide uninterrupted, co-ordinated care/service across programs, practitioners, organizations, and levels of care/service, over time.

In addition to these performance measures, the Canadian Council on Health Services Accreditation has identified the following broad performance indicators which will be used to evaluate performance of accredited facilities by 2001 according to the "AIM" (achieving improved measurement) standards:

- Responsiveness – including availability, accessibility, timeliness, continuity, equity;
- System Competency – appropriateness, health outcomes, caring, adverse occurrences, efficiency, legitimacy;
- Communication – courtesy & respect, consistency, confidentiality, integrity;
- Quality of Worklife – decision latitude, role clarity, co-worker/supervisor support, learning environment.

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[31] Canadian Council on Health Services Accreditation. A Guide to the Development and Use of Performance Indicators. Pg. 1.

[32] Ibid, Glossary

6.3 British Columbia Cancer Agency

The Mission of the BC Cancer Agency is to:

- reduce the incidence of cancer;
- reduce mortality from cancer;
- improve the quality of life for those living with cancer.

Cancer is a significant health problem to all British Columbians. It represents the #1 cause of death and one out of three persons can be expected to develop cancer sometime in their life. In 1997, more than one in four deaths in BC were due to cancer. We can expect the burden of cancer to increase because of the ageing of the population.[33] The BC Cancer Agency reports to the community on its activities through an annual report card.[34] This is a progress report on the status of cancer in the Province of British Columbia.

In 1996, there were 15,617 new cases of cancer in BC. It is expected that the number of cases will increase by 2-3% or about 400 additional cases annually. There are four main cancer types that account for about 57% of all new cases in 1996. These are: prostate cancer, lung cancer, female breast cancer, and colorectal cancer.

The following list of preliminary indicators has been developed to measure the quality of service provided at the new Cancer Centre:

Screening	
Effectiveness	% of the population (EFVCC catchment area) at risk, that is screened
Efficiency	turn around time for lab results
Accessibility	wait time for genetic counselling
Treatment	
Radiation Therapy	
Appropriateness	% compliance to treatment protocols
Efficiency	% utilization of available treatment time
Accessibility	wait time – diagnosis to consultation with Radiation Oncologist ▪ % compliance to less than 2 week wait time standard wait time – 'ready to treat' to first treatment appointment ▪ % compliance to less than 2 week wait time standard
Systemic Therapy	
Appropriateness	% compliance to treatment protocols
Efficiency	% utilization of available treatment time
Accessibility	wait time – diagnosis to consultation with medical oncologist % compliance to less than 2 week wait time standard wait time – 'ready to treat' to first chemo/drug therapy appointment
Rehabilitation	
Effectiveness	% of patients with persisting disability following treatment

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[33] Ibid, pg. 3.

[34] BC Cancer Agency. A report Card. March 1999.

Palliation	
Effectiveness	% of patients dying in preferred surroundings
	% of patients dying pain free
Cancer Centre	
Appropriateness	% compliance to treatment protocols
Efficiency	# of fully admitted cases # ambulatory visits
	ambulatory visits per worked hour
	% rebooking of appointments
	% utilization of ACU space
Accessibility	average distance travelled by patients
Acceptability	patient/client satisfaction rates
Research	
Effectiveness	% of eligible patients enrolled in a clinical trial
Accessibility	% of eligible patients offered enrolment in a clinical trial
Education	
Competence	# of student learning opportunities
	# of students

Financial Indicators

The following outlines some of the financial indicators that will be used to evaluate the outcome of the project:

- project completed on time and within budget;
- ability to operationalize facility within the estimated operating budget to deliver the identified programming; and
- ability to spend higher proportion of capital renovation projects on program related changes in other facilities in the region.

6.4 Ministry of Health

The Ministry has established a Performance Indicators Working Group to develop a set of high level Provincial performance indicators, which will be used to monitor Health Authority accountability to the Ministry of Health.[35]

A key program objective in the Ministry of Health's Performance Plan[36] is to address the availability and timeliness of cancer care. This objective supports the Ministry of Health Goal 2, that "British Colombian's will have access to health care services within an acceptable time period". The performance measures are established and include wait time standards and actual wait times reported for surgical oncology cancer treatment.

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[35] Health Systems Update. Canadian College of Health Service Executives, 1999 – 2000, 7th edition.

[36] Performance Plan 2000/2001. Ministry of Health and Ministry Responsible for Seniors. British Columbia. April, 2000.

6.5 Other

In addition to these performance measures, Section 3, Management and Governance, lists several independent monitoring processes that will be used in evaluation of the process.

7.0 RISK MANAGEMENT

The Risk Management component includes two separate but inter-related activities – risk assessment and risk management strategies. The identification and management of potential and actual risks includes the following steps:

1. Identify all risks associated with the project;
2. Quantify the degree of risk or the potential impact of each risk;
3. Identify critical time periods when the risk is likely to occur;
4. Select appropriate strategies to address risk when it becomes visible;
5. Establish responsibilities for managing risk;
6. Use appropriate channels to report risk experienced and action taken;
7. Evaluate how effectively potential or actual risks were managed.

7.1 Types of Risks

A recent review of the Capital Management Process within the BC Government [37] proposed a risk framework with four types of risk:

- General Risk;
- Project Management Risk;
- Construction Risk;
- Economic Risk.

General Risk includes factors such as project visibility, public or environmental concerns, safety, etc.

Project Management Risk may be related to the scope or complexity of the project, experience of the project team or degree of innovation (e.g. has this type of project ever been done before?).

Construction Risk may include impact of labour disruption, natural occurrences such as inclement weather, etc.

Economic Risk is concerned with factors that affect the economic viability of the project – cost increases or possible withdrawal of funding.

7.2 Quantifying The Degree of Risk / Potential Impact

The recent review of the capital management process suggested a potential framework for assessing risk. The risk framework is based on:

- the **probability** of individual factors becoming a problem; and
- the **extent of the impact** on the project.

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[37] Adapted from "Capital Management Process Review For The Government Of British Columbia", Final Report, April 2000, Deloitte Consulting.

For each risk factor, the probability and impact on the project are assessed to classify the degree of risk associated with the project, e.g. low, medium or high risk.

Exhibit 17

Classifying the Degree of Risk For a Project

Value	0	1	2	3
PROBABILITY OF BECOMING A PROBLEM	No chance	Low	Medium	High
Weighting or impact on project	None	Low	Medium	Significant

Levels of risk would be associated with specific values calculated once the risk assessment was completed. The level of risk acceptable for the project would be determined at the same time.

A Risk Classification Framework is shown in the following table. The Project Team used this Framework to assess the degree of risk related to this project.

Exhibit 18

Risk Classification Framework

Area	Factor	Probability 0 - 3	Weighting 0 - 3	Result (Probability Impact)
General Risk	High visibility	3	2	6
	Public concerns/objections	0	0	0
	Environmental factors	1	1	1
	Safety issues	1	1	1
	Size of project	1.5	1.5	2.25
	Legislative changes	2	2	4
Management Risk	Complexity	1.5	1.5	2.25
	Unclear or changing scope	3	1.5	3.5
	New technology	3	3	9
	Project newness	1	1	1
	Project manager experience	.5	3	1.5
	Design team experience	.5	3	1.5
	Contractor experience	.3	5	1.5
	Losing momentum through procedures	2	3	6
	Safety issues	1	3	3
	Aggressive/changing time schedule	2	2	4
	Labour productivity drop	1	3	3
Construction Risk	Availability of skilled trades	2	3	6
	Availability of bondable contractors	2	3	6
	Labour disruptions	3	3	9
	Material/equipment availability	1	3	3
	Weather-related problems	.5	1	.5
Economic Risk	Project funding uncertainty	3	3	9
	Labour cost Increases	3	3	9
	Material/equipment cost increases	3	3	9
	Currency fluctuation	3	3	9
	Project Total	44.8/78	61.5/ 78	111 of a potential of 234 points

7.3 Critical Time Periods

Not all risk factors will be applicable in all stages of the project. The classification of the risk may also differ during different stages of the project. The following table can be used as a monitoring tool to identify stages where specific risks are expected to or are more likely to occur. This critical time period worksheet could be used on a regular basis along with the Risk Classification Framework.

Exhibit 19

Risk Factors - Critical Time Periods

Project Stage	Project Concept	Project Planning	Engineering & Design	Procurement Construction	Post Construction
Factor					
High visibility					
Public concerns / objections					
Environmental factors					
Safety issues					
Legislative changes					
Complexity					
Unclear or changing scope					
New technology					
Project newness					
Project manager experience					
Design team experience					
Contractor experience					
Slow schedule					
Aggressive/changing time schedule					
Size of project					
Labour productivity drop					
Availability of bondable contractors					
Availability of skilled trades					
Labour disruptions					
Material/equipment availability					
Weather-related problems					
Project funding uncertainty					
Labour cost increases					
Material/equipment cost increases					
Currency fluctuation					
Project Total					

7.4 Risk Management Strategies

Risk management includes project management strategies, management and financial controls, documentation reporting processes and issues (risk) management planning. The proposed strategies for these are described below. The suggested independent monitoring controls are consistent with the current social capital process in place and according to the most recent capital plan requirements of the Ministry of Health. In addition, it is expected that the Ministry of Finance will put in place processes as suggested by the Deloitte report and by engaging an external consultant to conduct a review.

A major part of managing the risk on this project will be undertaken through the Project Management Office. See section 2.5.2 for more detail.

Other risk management strategies for specific stages of the project include:

- environmental risk management includes conducting a traffic study, green building, and storm water treatment and other studies as appropriate;
- evaluation, review and approval processes during the engineering and design stages of the project. An evaluation to ensure that the design is reflective of the project objectives and scope and a review that is concerned with regulations, licensing, safety and other standards. In addition, the detailed design phase should include cost management and value analysis techniques;
- procurement risk management strategies including processes and alternatives for contracting design and construction; procurement of property, materials, equipment and land; and assessment of the cost versus quality of the proposals received;
- construction management risk strategies including the need for contract financial management, supervision and inspection, establishing protocols for changes required and the formulation and implementation of recovery plans;
- the post-construction phase should include a formal process that should be set-up to assess the project's completion, conduct appropriate tests to ensure proper functioning and test compliance to ensure all specifications, regulations and contractual agreements have been adhered to. Protocol for unsatisfactory delivery should be established to resolve any disagreements, discrepancies and issues in the most efficient and effective manner to facilitate timely project closure and delivery;
- follow-up includes determining the projects success with regards to the asset built and the costs associated with its construction; all elements of the project's life cycle should be evaluated in order to determine both positive and negative outcomes.

Other processes that could influence the management of this project include the Ministry Performance Indicators Working Group. This Group will set high level Provincial performance indicators, which will be used to monitor Health Authority accountability to the Ministry of Health.[38]

7.5 Responsibilities For Managing Risk

The responsibility for managing risks rests with the Steering Committee.

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[38] Health Systems Update, Canadian College of Health Service Executives, 1999 – 2000, 7th edition.

7.6 Reporting

The Steering Committee will use the appropriate channels to report any risk experienced and action taken as required by the respective Boards and governing bodies and as described in the Deloitte report and as required by Treasury Board.

7.7 Evaluating How Risks Were Managed

The Steering Committee will commit to a process to evaluate how effectively potential or actual risks were managed during the course of the project. The following provides a narrative overview of the risks associated with this project.

Exhibit 20

Risk Assessment

General Risk	
High visibility	There may be significant public concern if this project is not approved
Public concerns / objections	
Environmental factors	
Safety issues	
Legislative issues	
Project Management Risk	
Complexity	This is a low risk
Scope	Unclear, changing
New Technology	This is a high risk as there will be nothing new introduced as this project will be similar to others, e.g., the Victoria Cancer Centre
Project uniqueness	This is a low risk as there are already 7 hospitals which are having major renovations or buildings, e.g., Surrey Memorial, West Coast
Project Management experience	BCBC has considerable project management experience, e.g., built Kelowna and Victoria Cancer Centre
Project Team/Contractor experience	Part of the Business Case includes a request for funds to put in place an outside consultant to review process, etc.
Schedule	There will be a prudent adherence to the schedule with a contingency plan; Victoria Cancer Centre built by BCBC was ahead of schedule by one month
Construction Risk	
Availability of Skilled Trades	
Labour Disruptions	
Material/Equipment Availability	
Weather-related Problems	

Financial/Management Risk	
Project funding uncertainty	N/A
Cost sharing	N/A
Labour cost increases management and timely approval	Fair wages; there is risk due to dollar fluctuations and inflation which will be mitigated as much as possible by project
Material/equipment cost increases	
Currency/ interest rate fluctuations	There are currency fluctuations related to equipment purchases however, his risk is perceived as low (?), for the duration of the project as based on experience with building three other Cancer Centres

8.0 IMPLEMENTATION PLAN

The implementation plan has been structured to divide development of the project into a number of phases. At the end of each phase, information and assumptions can be reviewed and the plan adjusted. It is expected that the implementation plan will evolve as more information is gathered.

The previous design scheme for MSA hospital advanced to completion of working drawings and specifications in 1997 at which time, work was suspended. Approximately seven years have now passed since functional programming of the facility was last considered and it was determined that an examination of the program was essential to outline requirements for the combined FVHC and EFVCC facilities. Additionally, this would assist in a detailed assessment of the suitability of the previous MSA design scheme for reuse.

8.1 Phase One – Programming

The first of three programming exercises, the Program Parameters Report, examined the full range of programs to be offered by FVHC and EFVCC. Once reviewed and approved, this report became the base for further, more detailed information contained in the Master Program. Findings contained in the Program Parameters report were reviewed by an outside consultant team to ensure that a Regional perspective is maintained throughout the planning phase of the project.

The second planning exercise, the Master Program, applied space standards to the program areas outlined in the Program Parameters Report. On completion of the Master Program, findings contained in this report were supplemented through implementation of a Physical Plan Review. This process involved a series of high-level modelling sessions with staff focus groups to confirm program adjacencies and, ultimately, to propose a range of total facility configuration options.

The Physical Plan review, together with the Master program were then used by Quantity Surveyors to generate program-level estimates of the total project cost. Estimates generated in this phase were based only on program areas outlined in the Program and industry-standard assumptions were employed for this early phase of project development. Initial findings indicated a project substantially larger than earlier contemplated in the Project Proposal (May 2000). A program review resulted in paring back program areas and related estimates of cost prior to their inclusion in the Business Case document (October 2000).

First draft of the facility program has now been completed and some adjustments to program areas have been made. Revisions to the total project cost have been implemented and these are included in this Business Case (January 2001). An assessment of the measure of reuse of the previous design still needs to be conducted and this will assist in determining the consultant team for the project but will have minimal impact on total project cost.

Phase One also involved cataloguing and review of industry-wide 'best practices' in terms of benchmarking clinical services, current facility design and innovation in the provision of future services. Particular attention has been focused on facility flexibility and adaptability to future technological and program change.

In anticipation of upcoming project phases, BCBC/HSG has undertaken an examination of project delivery options employed on other similar projects recently completed or in progress elsewhere in North America. This information will be used by the Project Steering Committee to help refine the management structure for the Project.

8.2 Phase Two – Project Design and Definition

The product of this phase is completion of the Design Development Report. The Design Development Report will contain all necessary design information sufficiently detailed for accurate project pricing. BCBC and MFCR standards for completion of the DDR will be followed.

This phase commences with formal engagement of the full consulting team required for the project. It is expected that this team will have been established during Phase One to permit commencement of schematic design work as soon as government approval to proceed with Phase Two has been provided. A conventional facility design process, paralleled with effective value analysis review, is contemplated. Construction consultants will be engaged to provide guidance to the design team in their determination of materials and methods of construction. Segmenting the project into smaller contracts will be examined in detail during this phase. At completion of schematic design, any deviation from stipulated sum procurement methodology will be submitted to Ministry of Finance for review and approval. A parallel process of determining the most suitable and cost-effective method of acquiring equipment and of providing interior finishes and fit-out will be undertaken by the project team. Because most of this equipment is subject to fluctuations of the Canadian dollar against other currencies, effective means of mitigating this risk will be examined. The City of Abbotsford will be involved in review and approval of the project and many of the major hurdles to achieving this approval were addressed by the Project Team during development of the previous design scheme.

8.3 Phase Three – Construction Documents, Tendering and Award

Once the project scope has been fully articulated in the Design Development Report, it is anticipated that the project will be carefully segmented into components. Multiple contracts will be prepared with a range of contractors all reporting through the Construction Manager to the Project Team. These contracts will be carefully defined to ensure clarity of scope. Work will be tendered and awarded sequentially to maximize benefit to government and to suit local construction industry capacity. It is not yet known what method of procurement will best accomplish this goal, but it is likely that a form of construction management may yield the greatest overall benefit. State-of-the-art technology will be employed in the dissemination of information and in the management of project cost reporting. It is anticipated that a project web site will be established to aid in the distribution of up-to-date project information among project consultants, construction consultants, government and the public. Finishes, fitments and equipment will be procured as part of this overall management process based on principles and procedures established in Phase Two.

8.4 Phase Four – Construction

Once approval has been received to commence construction, a construction office will be established and regular progress meetings will be conducted to ensure that work, both on and off site, is carefully scheduled to maximize efficiency. A construction management firm will be selected during Phase Three and site superintendents from that firm will manage on-site work as it progresses. Sequential tendering of the work, site meetings and progress claims for all contracts will be managed through this firm. Decisions on quality, pace and progress of the work will be the responsibility of the Project Team through the Project Manager. Scheduling of the work, together with budget reviews, will be managed on a week-to-week basis to ensure that all aspects of the project are receiving due consideration. The Project Team, as required under the new Budget Transparency Act, would provide regular communication of progress.

8.5 Phase Five – Commissioning and Project Close Out

In preparation for project completion, a detailed completion plan will be prepared. This will include scheduling all work needed to ease the transition of services from the existing hospital into the new facility. At the appropriate time, consultants will be engaged to lead the Project Team through commissioning of the project. This work will involve coordination of equipment specialists to ensure that medical equipment is received and installed properly, as well as a contingent of construction commissioning professionals to ensure that all building components are performing in accordance with specified standards.

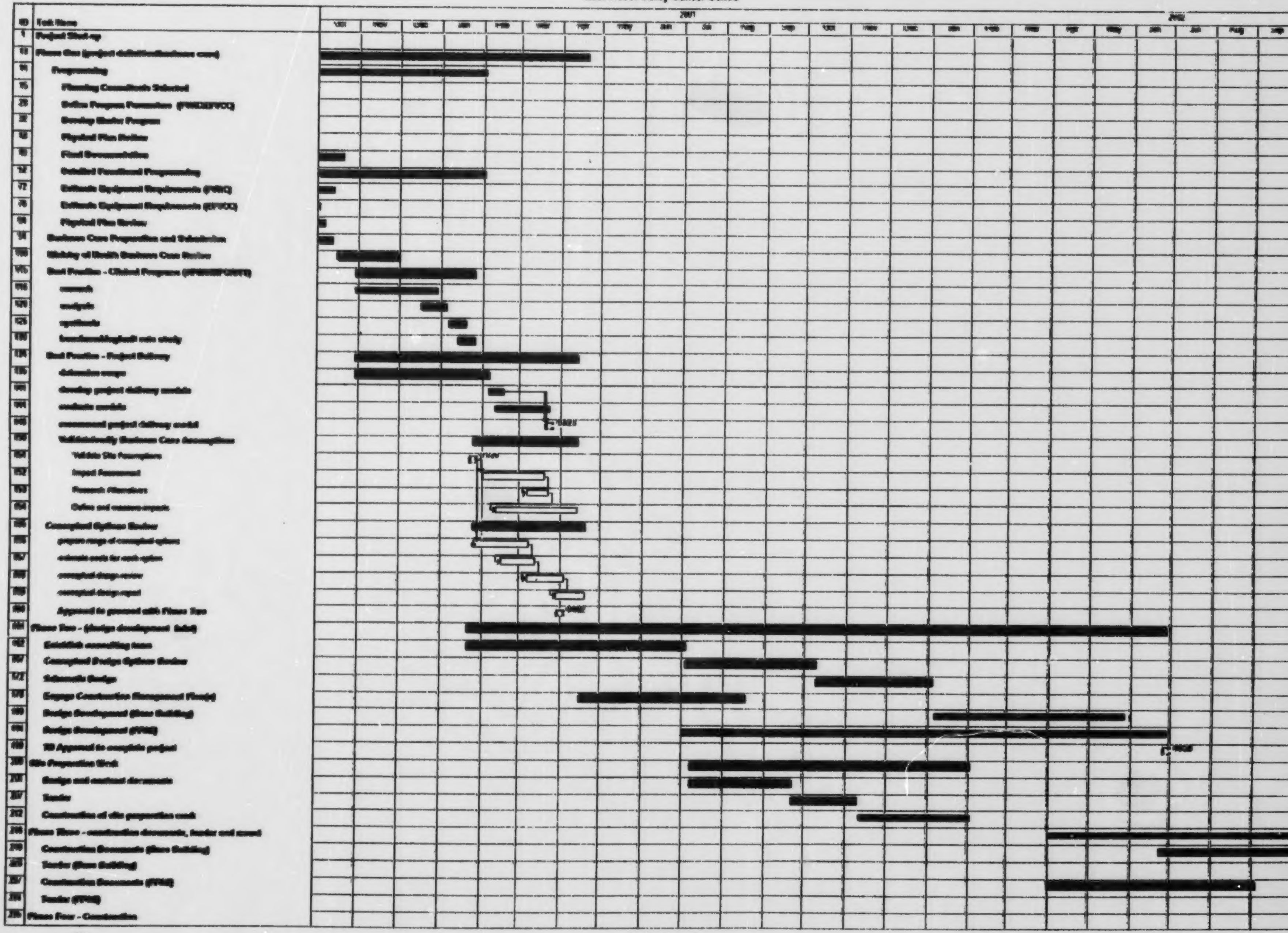
As contracts are declared substantially complete, the Project Team will manage builders' lien and deficiency holdbacks. Project close-out will involve reconciliation of contracts to the total project budget. Savings and extras will be tracked as the project proceeds with regular status reports being rolled into a clear final accounting of the project cost.

8.6 Phase Six – Move and Warranty Management

As the project approaches completion, a detailed move plan, prepared in an earlier phase (after extensive consultation with the owners) will outline the best sequence to get the new facility into full operation. The Construction Manager through the Project Team will manage any warranty issues. It is anticipated that a post-occupancy audit will be conducted to verify that performance measures established at the outset of the project have been met.

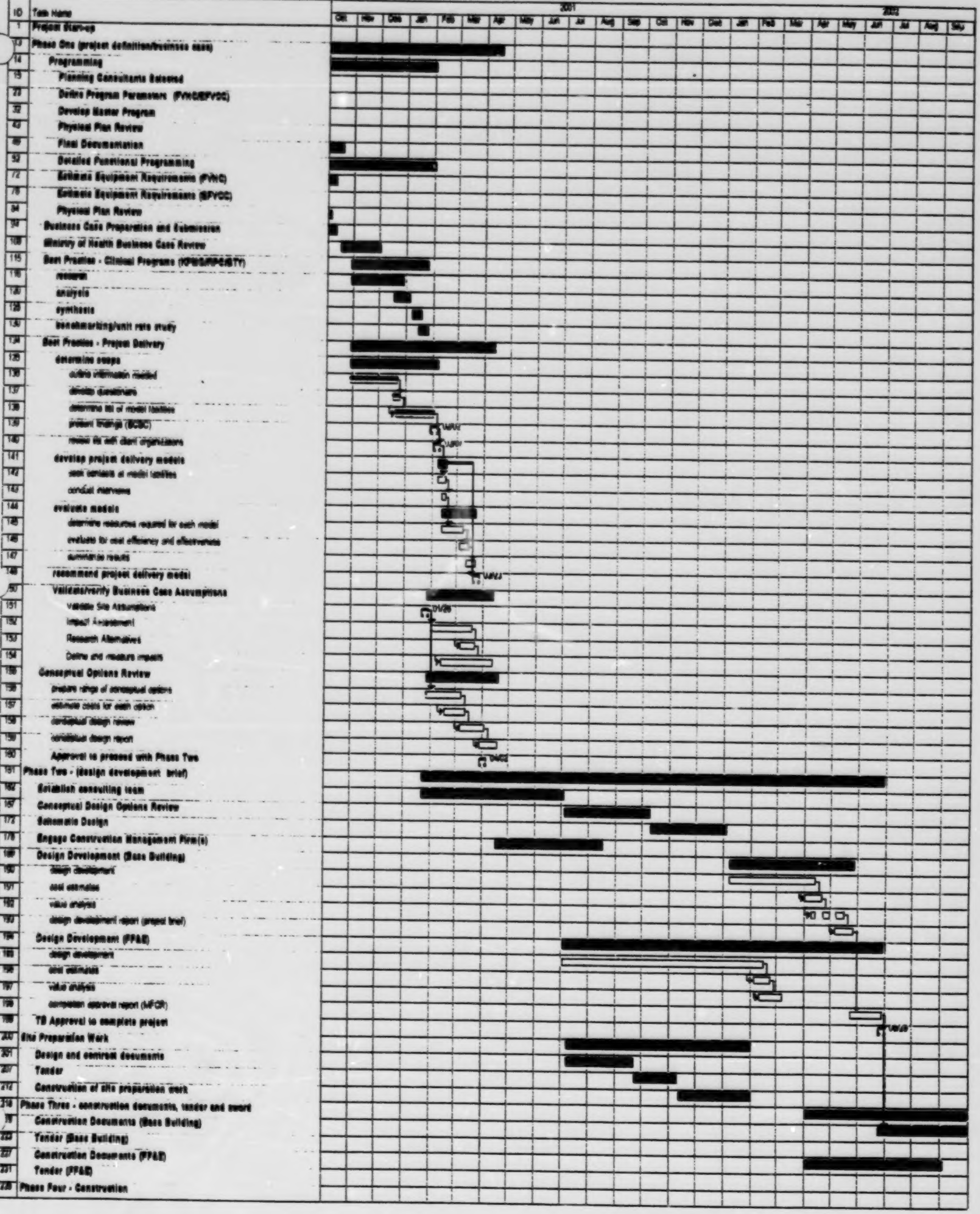
These six phases of the project are shown on the attached Gantt Charts.

Fraser Valley Health Centre and East Fraser Valley Cancer Centre



Keller, MAIBC

Fraser Valley Health Centre and
East Fraser Valley Cancer Centre



ID	Task Name
1	Project Start-up
13	Phase One (project definition/business case)
14	Programming
15	Planning Consultants Selected
23	Define Program Parameters (FVHC/EFVCC)
32	Develop Master Program
43	Physical Plan Review
49	Final Documentation
52	Detailed Functional Programming
72	Estimate Equipment Requirements (FVHC)
78	Estimate Equipment Requirements (EFVCC)
94	Physical Plan Review
97	Business Case Preparation and Submission
108	Ministry of Health Business Case Review
115	Best Practice - Clinical Programs (1PMS/RPC/STY)
116	research
120	analysis
125	synthesis
130	benchmarking/unit rate study
134	Best Practice - Project Delivery
135	determine scope
136	outline information needed
137	develop questionnaire
138	determine list of model facilities
139	present findings (BCBC)
140	review list with client organizations
141	develop project delivery models
142	seek contacts at model facilities
143	conduct interviews
144	evaluate models
145	determine resources required for each model
146	evaluate for cost efficiency and effectiveness
147	summarize results
148	recommend project delivery model
150	Validate/verify Business Case Assumptions
151	Validate Site Assumptions
152	Impact Assessment
153	Research Alternatives
154	Define and measure impacts
155	Conceptual Options Review
156	prepare range of conceptual options
157	estimate costs for each option
158	conceptual design review
159	conceptual design report
160	Approval to proceed with Phase Two
161	Phase Two - (design development brief)
162	Establish consulting team
167	Conceptual Design Options Review
172	Schematic Design
178	Engage Construction Management Firm(s)
189	Design Development (Base Building)
190	design development
191	cost estimates
192	value analysis
193	design development report (project brief)
194	Design Development (FF&E)
195	design development
196	cost estimates
197	value analysis
198	completion approval report (MFCR)
199	TB Approval to complete project
200	Site Preparation Work
201	Design and contract documents
207	Tender
212	Construction of site preparation work
218	Phase Three - construction documents, tender and award
219	Construction Documents (Base Building)
223	Tender (Base Building)
227	Construction Documents (FF&E)
231	Tender (FF&E)
235	Phase Four - Construction

Peter Kallos, MAIBC

APPENDIX A

FRASER VALLEY HEALTH CENTRE / EASTERN FRASER VALLEY CANCER CENTRE PROJECT DEFINITION REPORT

See Project Definition Report.

Appendix B

KPMG CONSULTING SERVICES
FRASER VALLEY PROJECT PARAMETERS REVIEW
EXTERNAL ASSESSMENT

Fraser Valley Project Parameters Review External Assessment

Objectives

The external consulting team[1] was asked to:

- complete a high level external review of the project parameters;
- identify potential areas for further in-depth review; and
- focus on opportunities for the organization to add value to the project.

Our Activities

The team reviewed the June 2000 Proposal prepared for MoH, and the August 28, 2000 version of the Project Parameters document. The team also met with the FVHR Director of Planning and the BCBC project manager, to gather background information on the status of the planning and the project, as well as assumptions and methods underlying the current documents.

On September 27, 2000 the consulting team met with the FVHR Executive Team in a focus group format, where there was the opportunity to dialogue and clarify questions, approaches, and update the consulting team on current and anticipated planning in the region at the program level regarding service delivery models for a variety of programs.

Scope Limitations and Context for this Review

This review was defined as a high level overview, reflecting both the time constraints and the current stage of planning process.

A number of planning activities were underway concurrent to this review process. The New Health Centre Business Case and the Regional Clinical Program Plan were in development and due for completion at the same time as the report. In addition, the project team was actively considering ways to reduce the estimated project costs, which might include some space and program adjustments, to achieve Ministry defined targets as they are currently understood.

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[1] See Attachment 1 for team qualifications.

Findings

Overall, the team is satisfied that the proposed size of the new FVHC facility will be appropriate for FVHC to fulfil its role in the regional acute care program and assist in meeting regional targets of 90% or higher capture of non-surgical and 85% of surgical service demand by 2010, increasing to 90% or higher in most services by 2015.

These targets appear appropriate and achievable, with the following assumptions:

1. Only a small percentage of acute beds will be occupied by alternate level of care (ALC) patients. The region has identified an ALC target of 7% of their medical/surgical beds for 2005. Further reductions in use of acute medical/surgical beds for ALC are proposed, with a target of 5% by 2010, and 3% by 2015.

2. Opportunities to consolidate selected elective services for the region at Mission Memorial Hospital (MMH) and Chilliwack General Hospital (CGH) will be pursued to ensure optimal use of available resources and a critical mass of particular types of acute care. This will assist the region attract, retain, and maintain skills of specialized staff and physicians, and maintain service quality. Reciprocally, the new facility would back up these hospitals by providing sufficient sub-specialty and clinical call and other capacity to handle some redistribution of current activity in the region, as well as a significant share of the workloads proposed for repatriation from Lower Mainland acute care facilities.

3. Achieving the market share targets identified will hinge upon recruitment and retention of necessary specialized nursing, technologist and medical personnel at FVHC and within the region as a whole. Current planning will require substantial increases in operating funds, acute care beds, operating rooms, day care capacity, and all associated resources. This is particularly critical to enable achievement of surgical volume targets and diversification into more specialized programming in response to regional service needs and provincial services planning. For example, significant impacts will be felt as a result of the commitment to support provincial renal service delivery and provincial cancer care. This transition in role will require careful monitoring and balancing of medical and surgical resources, and the assurance that acute medical resources are not pre-empted by the needs of long term chronic conditions which are better addressed in sub-acute or other settings.

4. The team is supportive of the proposal not to offer specialized pediatric surgery, children's acute psychiatry, higher risk maternity and neonatal care, thoracic surgery, neurosurgery, and cardiac surgery in the region. It will be important for FVHR to continue to engage in macro-regional planning with Simon Fraser, South Fraser and Vancouver/Richmond

regions to ensure timely and appropriate access to services not planned for delivery within the region, and support to appropriate service delivery models within the region. Discussions with these regions have begun and are continuing to evolve. The idea will be to 'partner' with other groups to identify the total patient volumes for multiple regions and to jointly demonstrate this demand for programming to the government.

Comments on Specific Service Planning Assumptions

The following notes reflect issues raised and comments made by the consulting team. These are based on review of the planning documents and the discussion with the Executive team.

Surgical Services at FVHC

The self sufficiency targets of 85% of cases are appropriate for 2010, approximately 5 years after completion of the facility. To achieve this there will need to be not only additional capacity as outlined in the planning documents but also some significant planning to ensure coordination of the growth of various services and recruitment of key personnel.

The OR capacity looks appropriate for the intended volumes, however, there will need to be a higher proportion of surgical beds than currently exists if these targets are to be met. The increase in beds does not preclude the necessity to move a higher proportion of surgery to the day care setting. The plan to add a vascular surgery program is appropriate, and will need to be reviewed again closer to completion of the site to assess impact. As mentioned earlier, it is appropriate that the region plan cooperatively with adjacent regions and other service providers for timely and appropriate referral of FVHR patients requiring cardiac surgery, neurosurgery, specialized paediatric surgery and thoracic surgery.

It will be necessary to use other sites, to develop specialized programs to relieve surgical volumes and bed requirements at FVHC. These could include elective services, specialized inpatient rehabilitation and geriatric assessment. It is expected that some direction to this end will be provided in the Regional Clinical Program Plan to be appended to the Business Case document.

Medical Services at FVHC

The self sufficiency targets of more than 90% of cases are appropriate for medical services and should be accommodated with the proposed size of the facility. The team is supportive of the plans in the medical areas with the following comments.

Cardiology services will be accommodated with a valve and pacemaker clinic, etc. and would complement the vascular program when it is developed.

The Ministry of Health has recently requested that the FVHC develop a nephrology/renal program that includes 15 dialysis stations in the new facility. This service will build on the existing 8 dialysis chairs available in a community, which are planned to continue to operate. This service is required by the Region, and it has significant implications for operating and capital costs. These need to be reflected in the Business Case document.

Geriatric medicine is anticipated to operate as an integrated program with community programs and with acute and community geriatric mental health services located at one or more sites outside FVHC. This program will have a lead role in diversifying supports to seniors to prevent acute admissions and provide chronic and non-acute care in more appropriate community and in-home settings. Engagement of private and non-profit partners in partnerships which diversify options for supportive services to seniors is an identified strategy.

Nephrology, cardiology, gerontology and specialized rehabilitation are not yet represented in the region by sub-specialty staff. Development of these services will assist the Region to achieve its self-sufficiency targets. They will also contribute to the complexity and intensity of demands on the laboratory, emergency, intensive care, and other services in the new facility, which will contribute to increased workloads, requirements for recruitment, and operating costs.

ICU/CCU at FVHC

The planned combined unit appears appropriate, particularly if the full 18 station capacity is utilized from site opening, with the centre 6 stations used as swing or step-down beds.

Staff shortages, rigorous protocols and treatment expectations, plus on-call issues are likely to make critical care difficult to sustain for small volumes. The new unit has appropriately been designed with capacity to support some of the workload currently managed at neighbouring hospitals in the region, if and as necessary.

Emergency Services at FVHC

The planners have recently increased the estimated requirement for FVHC from 55,000 visits per year to 60,000 for 2015. This is a net figure derived from driving down present utilization (via future community initiatives), responding to population growth, and adding in a small amount of capacity for renal client demand and for repatriation.

There will be sufficient physical capacity to accommodate some of the current critical care emergency workload from other sites in the region, if and when that is needed.

The team is supportive of the planning for short term observation beds (Clinical Assessment Unit) either in the emergency department or, if relationships permit, in the day care area.

Space allocations to support appropriate staffing and programming for special populations is suggested (e.g. substance misuse, domestic violence, etc.). It is felt that this activity needs to be addressed during the detailed functional programming process taking place between now and the middle of January 2001.

Paediatric Services at FVHC

We are suggesting that the proposed 20 bed inpatient paediatric unit be built to allow flexible use of that space for inpatient, ambulatory pediatric service, and short term observation beds. In this way, the paediatric staff can provide both in-patient and ambulatory services. In addition, due to small numbers of pediatricians, there may be a need in the future to consolidate care at this site. It is felt that should this situation arise the workload can be accommodated within this unit.

It is appropriate that tertiary and specialized paediatric surgical care are to be referred to The Children and Women's Health Centre of BC, but earlier return for convalescence is anticipated.

Psychiatry / Mental Health Services at FVHC

This program is intended to be a fully integrated community–hospital program. The intensity of services available in the community has expanded in recent years (for example, Emergency Short Stay beds) and is expected to continue to diversify and expand hours of availability. The program will continue to take advantage of off-site locations and explore "P3" construction opportunities on the FVHC site for some portion of its ambulatory/outpatient programs. Questions about which programs are offered in hospital space or in community remain and will be explored further in the next stage of planning.

We understand that the adolescent unit is planned to be a separate, flexible-sized pod within the adult psychiatry unit. The plan to have space flexible to allow sections to be separated as required for program and security needs is very appropriate.

Acute psychiatric problems in the geriatric age group will be handled in the unit as necessary, but most psychogeriatric clients will be assessed and managed in the community and with the support of a regional geriatric assessment unit which is not planned for the FVHC site.

Ambulatory Services at FVHC

This area, together with the Wellness Centre, is undergoing some refinements and rationalization. It is important to ensure that this review not result in undersizing of ambulatory capacity; as this often occurs as a money-saving endeavor, and results in small, fragment service areas that increase operating costs and decrease accessibility and effectiveness.

The current size of the medical day care unit looks too small given the services it plans to operate. In particular, there should be clarification about the types of cancer care services that will be provided in that space.

Reception and other common services will be shared wherever possible with some streaming based on functional requirement. Relationships will be as 'user friendly' as possible, including access to parking and entries.

Alternate Level of Care at FVHC

The 1999/2000 ALC volumes of 16,000 patient days include activity of 25 Discharge Planning Unit beds which are not part of the acute care bed count.

A number of measures have been implemented that are designed to reduce the number of acute beds occupied by patients requiring alternate levels of care. There will need to be ongoing efforts to create alternative resources and improve supports to allow the region to reach a target of 7% ALC days in acute medical/surgical beds in the new FVHC facility by 2005.

Planning and development of long term care residential beds, in addition to complementary community support services programming, will be a critical component of this effort, to address current service demand and population growth and aging.

Services for Seniors

Given the utilization rate of acute and other health services by the seniors population, development of specialized expertise is planned. Currently there are limited specialist geriatric medical or psycho-geriatric resources available, but efforts are underway to support development of the expertise of existing resources and recruitment of additional staff. Sub-acute programs, rehabilitation, acute assessment units are planned for the Region.

Comments on Infrastructure Plans

Overall, the team felt that infrastructure plans for the FVHC represent a solid foundation for operations at the FVHC site and for the region as it looks forward to the 2005 – 2015 time frame. There is evidence of significant strategic planning and thinking in these areas. The team's inquiries and comments relate to a limited number of areas only.

Materiel Management

The project parameter document indicated that there would be a warehouse offsite. We understand that this thinking has changed to the idea of developing the warehouse on the FVHC site with a combined loading dock. We support this direction as ongoing operational costs will be significantly less if the major user in the region (FVHC) is also the host site for the service. While initial capital cost concerns may create pressures to locate this service elsewhere, long term operating cost considerations would suggest this is not cost-effective.

Dietary Services

The sizing of the dietary service needs to be confirmed, reflecting flexibility in the mix of on-site and bulk preparation. This assessment of requirements at FVHC will need to take into consideration the capacity and age of existing capacity in the region, and anticipated requirements or opportunities at new LTC facilities anticipated in the region.

Staff and Patient Support Services

Workplace health is an important area of concern, particularly as we recognize the challenges of retaining and recruiting personnel. Spaces for quiet meditation and spiritual reflection, child day care, and fitness supports (e.g. changing facilities for workshift fitness activities or bicycle commuters) may make a significant contribution to workplace health and organizational climate and culture.

Conclusion

The August 28, 2000 project parameters document does not provide enough detail on a number of key areas. However, many questions were answered by the Executive at the focus group and further detail will be available in the Business Case and the Regional Clinical Program Plan.

Given our discussions with the Executive we are supportive of the Ministry's approval to move forward to the next stage of planning. Clearly a new hospital is required in the Fraser Valley now, and the pressures for the Region to manage demand until a new facility is built will be significant.

In addition to the team analysis and best practices review which will accompany functional programming, there are a number of areas which require a more strategic review. These include, but are not limited to:

- developing a strategy to manage the needs of seniors and reduce the ALC days in acute care;

- developing strategies to achieve self-sufficiency targets including physician supply planning;
- exploring further the integrated Mental Health program design and best location of programs; and
- programming the ambulatory care, including medical day care and relationships with the cancer agency.

Attachment 1
Team Qualifications

Kit Henderson, President, Henderson Health Care Consulting Ltd., has been involved in Health Care Delivery for over thirty-five years; for the last twenty-five years in the administration of complex health organizations. During nearly eighteen years with the British Columbia Ministry of Health he was administratively responsible for many of their health programs: Hospital Programs, Continuing Care, including Home Nursing and Home Support, Ambulance Services, Native Health, Medical Services Plan and Pharmacare.

He also has recent exposure to hospital administration while on contract as a medical administrator at Royal Inland Hospital and St. Joseph's General Hospital, Comox, and has been project consultant for major planning and team building projects at Royal Inland and Lions Gate Hospitals.

Henderson Health Care Consulting, Ltd. has also covered a wide range of health related projects including Business Design for Health Care Systems; Medical Manpower Plans. Strategic Planning and Role Studies; and Utilization Management Reviews.

Patricia Ryan is a Managing Director in the national public sector practice of KPMG Consulting. She has worked for 18 years as a consultant and assisted many health care organizations with strategic planning or role reviews. She has also done a number of larger Regional service plans and multi-site operational reviews.

Patricia specializes in health sector strategy, planning, and quality management, working for clients across Canada. She has conducted major projects with acute care hospitals, public health departments, federal and provincial governments, regional planning bodies, mental health agencies, long term care facilities and voluntary agencies. She is particularly interested in population-based planning and strategy work, and new models of service delivery.

Val Embree is a Principal in the public sector practice of KPMG Consulting. She has more than 10 years consulting experience and has supported a number of strategic and clinical service planning initiatives, including a four year/thirteen hospital strategic planning project, a number of regional and macro-regional mental health services planning initiatives, and other clinical service strategic and program planning projects. She has led service integration planning in a variety of settings, and coordinated specialized teams in organization and system evaluations and reviews. She is a very capable project leader, with a track record of completing projects on time and on budget.

APPENDIX C

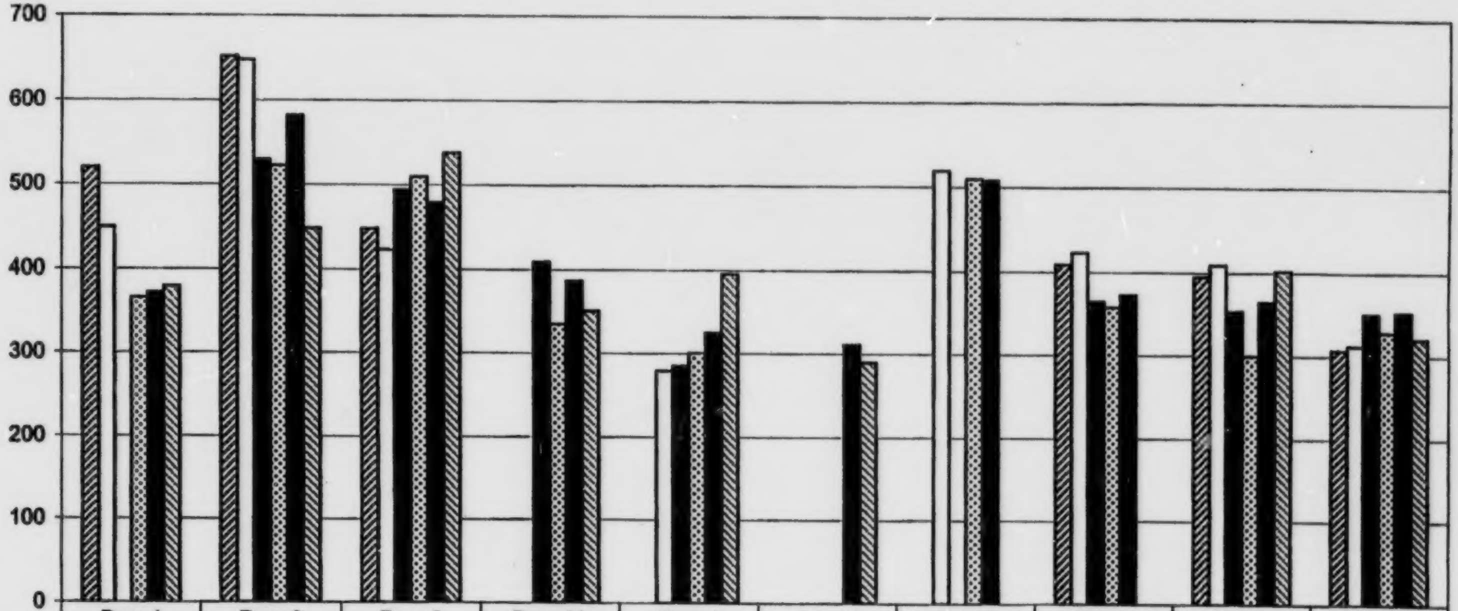
OPERATIONAL PARAMETERS FOR REGIONAL CANCER CENTRES

Patients Receiving Chemotherapy

Location	1996/97	1997/98	1998/99
Vancouver Centre	4,859	5,031	5,336
Vancouver Island Centre	1,895	2,030	2,227
Fraser Valley Centre	1,400	1,768	2,242
Centre for the Southern Interior	n/a	n/a	1,041
Communities Oncology	8,919	9,474	9,026
Province of BC*	15,425	16,601	17,620
% Increase over previous year	6%	8%	6%

*The total patients receiving chemotherapy in the Province of BC is defined as "one patient receiving one or more chemotherapy treatment in a financial year". Therefore, there is overlap reflected in the individual location figures as patients may be seen and treated in more than one cancer centre or community hospital during a single year.

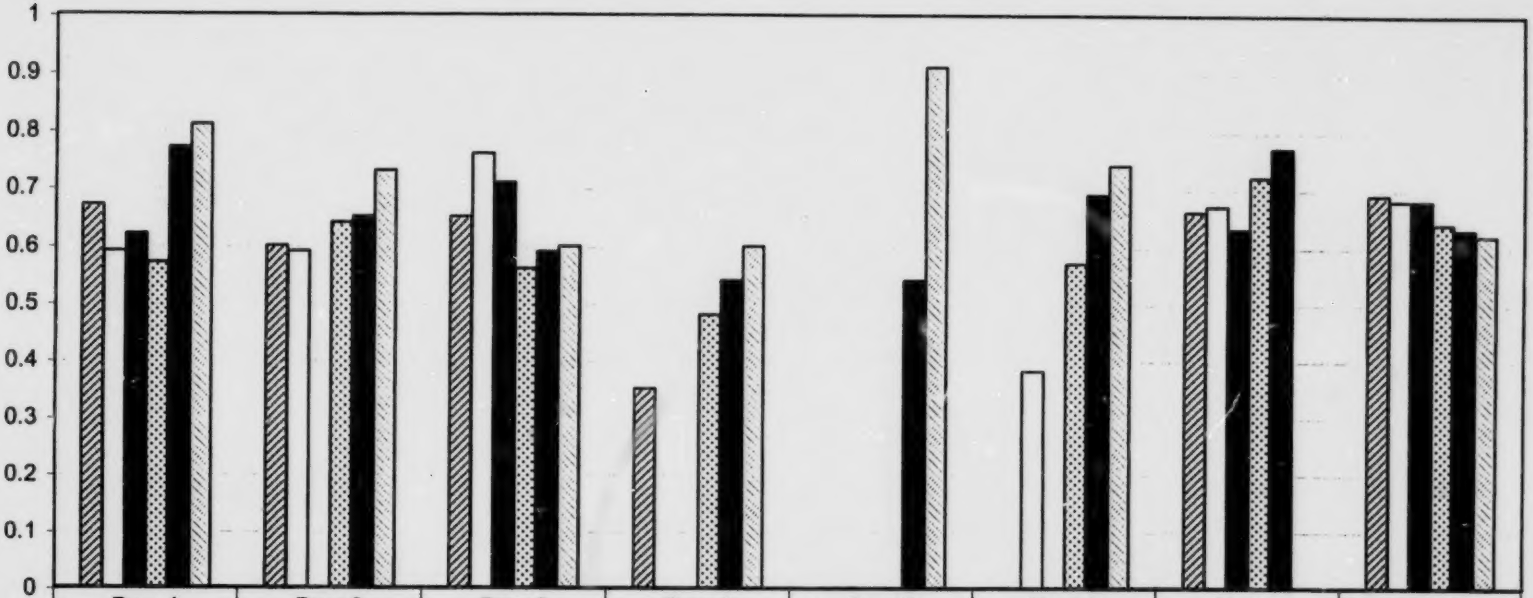
Provincial Cancer Agencies Comparative Data
Radiotherapy Patients per Linac and Cobalt Machines



	Prov 1	Prov 2	Prov 3	Prov 4A	Prov 4	Prov 5	Prov 6	Prov 7	Prov 8	Prov 9
▨ 1993/94	520	652	448					409	395	307
☐ 1994/95	449	648	423		279		519	423	409	312
■ 1995/96		530	494	409	285			365	354	351
▩ 1996/97	366	523	510	335	301		510	358	300	329
■ 1997/98	372	582	479	387	325	311	508	373	365	353
▧ 1998/99	379	448	538	351	396	290			402	321

Provincial Cancer Agencies Comparative Data

Ratio of New Cancer Patients Seen to Provincial Cancer Frequency

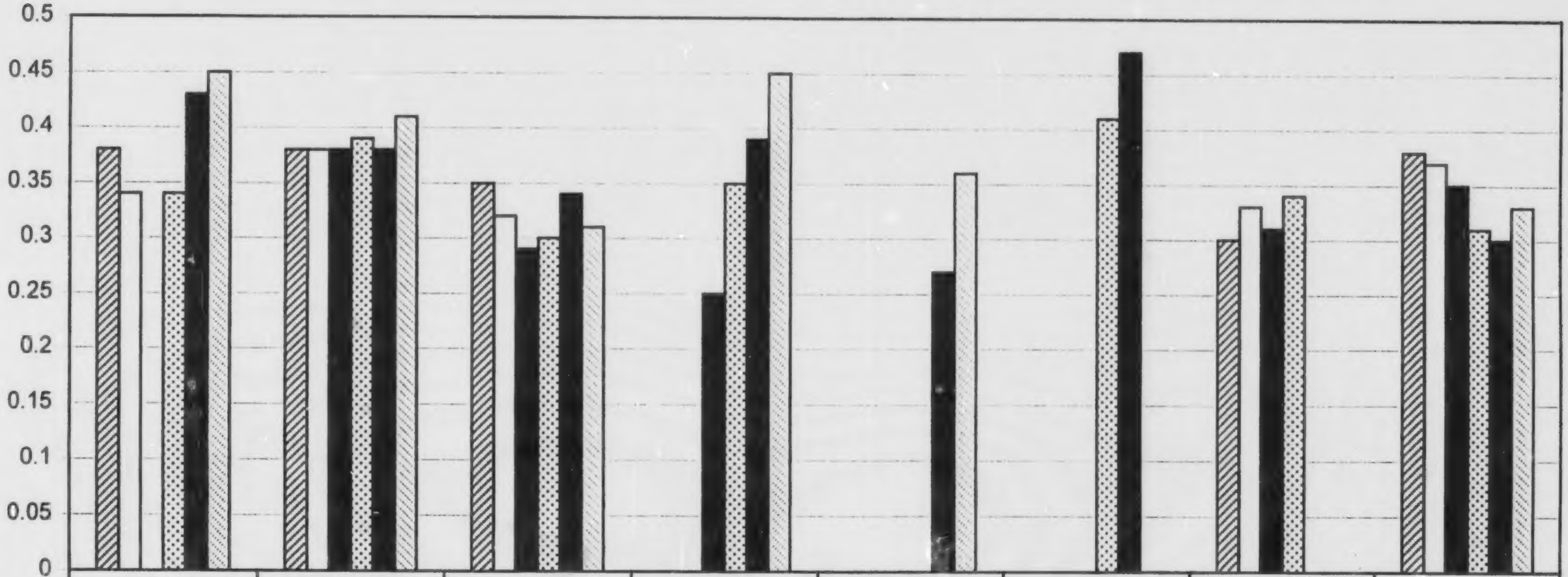


	Prov 1	Prov 2	Prov 3	Prov 4	Prov 5	Prov 6	Prov 7	Prov 8
▨ 1993/94	0.67	0.6	0.65	0.35			0.66	0.69
☐ 1994/95	0.59	0.59	0.76			0.38	0.67	0.68
■ 1995/96	0.62		0.71				0.63	0.68
⊠ 1996/97	0.57	0.64	0.56	0.48		0.57	0.72	0.64
■ 1997/98	0.77	0.65	0.59	0.54	0.54	0.69	0.77	0.63
☐ 1998/99	0.81	0.73	0.6	0.6	0.91	0.74		0.62

Appendix C np-freq.xls
2001/02/03

Provincial Cancer Agencies Comparative Data

Ratio of Radiotherapy New Cases to Cancer Frequency



	Prov 1	Prov2	Prov3	Prov4	Prov5	Prov6	Prov7	Prov8
▨ 1993/94	0.38	0.38	0.35				0.3	0.38
☐ 1994/95	0.34	0.38	0.32				0.33	0.37
■ 1995/96		0.38	0.29	0.25			0.31	0.35
⊡ 1996/97	0.34	0.39	0.3	0.35		0.41	0.34	0.31
■ 1997/98	0.43	0.38	0.34	0.39	0.27	0.47		0.3
☐ 1998/99	0.45	0.41	0.31	0.45	0.36			0.33

Appendix C newrt-cf.xls
2001/02/07

APPENDIX D

SELECTED ASPECTS OF THE PROPOSAL SUBMITTED TO THE MINISTRY OF HEALTH, JUNE 2000, FOR THE FRASER VALLEY HEALTH CENTRE AND EASTERN FRASER VALLEY CANCER CENTRE, ARE INCLUDED IN THIS APPENDIX

APPENDIX D(I)

REGIONAL BED CALCULATIONS

APPENDIX A: REGIONAL BED REQUIREMENTS

The Ministry of Health and FVHR worked together to determine an appropriate methodology to calculate Regional Bed Requirements. The methodology included an assumption that the starting point would be the current utilization rate per thousand (patient days) by age cohort for the FVHR (1998/99 data). Each age cohort utilization rate was improved by 5% for 2005,2010 and 2015 to a minimum of the current 3 rd lowest ASUR in BC for that age cohort. Furthermore, those age cohorts that were relatively high in comparison with other regions would use a 5% improve over each time period and would not be forced to the 3rd lowest level.

The utilization rates were then applied to population projections (pEOPLE 24) for each age cohort and reduced to assume an 85% self sufficiency rate (achieved through repatriation of patients to the region). This provided the patient days for each age cohort.

The referred in population was calculated based on actual patient days and projected using the overall provincial population growth estimates (pEOPLE 24). This removes the high growth rate in the FVHR from the populations from which our referred in patients come from.

Total patient days are calculated adding the 85% self-sufficiency and the referred in. The total patient days are translated into beds using an 85% average occupancy rate.

Additional bed allowances are included for the pediatric and obstetric services. The unpredictable nature of these two populations requires that the bed numbers allow for a much lower occupancy rate. For this reason an additional 4 beds for pediatrics and 11 beds for obstetrics (12 iii 2015) have been included.

Detailed calculations are included on the following page.

Bed Projection Calculations

		ASUR Days			Population Projections			Patient Days at 85% Self Sufficiency		
Age Group	**2000 (98/99)**	**2005**	**2010**	**2015**	**2005**	**2010**	**2015**	**2005**	**2010**	**2015**
<1	1044	992	942	895	3,578	3,974	4,365	3,016	3,183	3,321
1-4	160	152	144	137	14,440	15,876	17,561	1,866	1,949	2,048
5-9	79	75	71	*70*	18,609	19,759	21,743	1,187	1,197	1,294
10-14	93	88	84	*83*	19,890	19,923	21,185	1,494	1,421	1,495
15-19	222	211	200	190	19,462	20,651	20,694	3,489	3,517	3,348
20-24	348	331	314	298	18,663	20,293	21,479	5,244	5,417	5,447
25-29	421	400	380	361	17,891	21,054	22,810	6,082	6,800	6,998
30-34	382	363	350	*350*	18,612	21,218	24,641	5,741	6,312	7,331
35-39	325	312	312	*312*	20,397	21,476	24,300	5,409	5,695	6,444
40-44	310	295	280	*272*	22,843	22,212	23,409	5,718	5,282	5,412
45-49	376	357	350	*350*	21,294	23,984	23,411	6,465	7,135	6,965
50-54	471	447	425	*425*	17,517	22,031	24,735	6,662	7,960	8,936
55-59	594	576	576	*576*	15,092	18,186	22,679	7,389	8,904	11,104
60-64	818	777	739	*739*	11,694	15,603	19,655	7,724	9,801	11,718
65-69	1144	1,132	1,132	*1,132*	9,764	11,892	15,658	9,395	11,442	15,066
70-74	1659	1,584	1,584	*1,584*	8,985	9,314	11,295	12,097	12,540	15,208
75-79	2072	2,113	2,113	*2,113*	7,766	7,814	8,157	13,948	14,034	14,650
80-84	2837	2,925	2,925	*2,925*	5,658	6,070	6,133	14,067	15,092	15,248
85+	3046	3776	3,776	*3,776*	4,906	6,195	7,104	15,746	19,883	22,801
Total					**277061**	**307525**	**340014**	**132,742**	**147,566**	**164,833**
Referred in Patient Days (Based on 98/99 referred in days and BC Population Growth Rate)								**5795.75**	**6267.53**	**6739.47**
Bed Projections (at 85% occupancy)								**447**	**496**	**553**

Add Ped Allowance	**4**	**4**	**4**
Add Obs Allowance	**11**	**11**	**12**
Total Regional Beds	***462***	***511***	***569***
FCH	16	16	16
MMH	52	52	52
CGH	133	161	161
MSA	261	282	340

0.85

0.85 0.05

Assumptions

Occupancy Rate = 85%

Self Sufficiency Rate = 85%

Improvement rate on ASUR = 5%

Projected Utilization rates are calculated based on 5% improvement on days/1000 up to the 3rd lowest ASUR in the province (98/99)

PEOPLE 24 data for population growth

Assuming the 5% improvement, target utilization in days/1000 are reached by 2015 in all but 5 age cohorts

Inability to reach the target utilization is due to higher fertility rates in this region

Referred in amount is calculated using the referred in patient days 1998/99 and projected using BC population growth rate (PEOPLE 24)

This model has no accounting for increases expected with the introduction of the cancer centre - trying to get the impact information

Additional Pediatric Allowances (4 beds) are calculated from the difference between 50 and 85% occupancy of these beds (range is 3.7 to 4.2 from 2005 to 2015)

Additional Obstetric Allowances (14 beds) are calculated from the difference between 60% and 85% occ.of these beds (calculation using 3000 births (99/00 data) at 3 day ALOS)

Assumes opening the shelled in space at CGH (28 bed unit) in 2010.

APPENDIX D(ii)

VISION, MISSION AND STRATEGIC DIRECTIONS OF FVHR

APPENDIX C: VISION, MISSION AND STRATEGIC DIRECTIONS OF FVHR

VISION: A REGION OF HEALTHY COMMUNITIES OF INFORMED PEOPLE LIVING HEALTHY LIFESTYLES.

MISSION: THE FVHR DELIVERS PREVENTIVE AND HEALTH CARE SERVICES RESPONSIVE TO THE NEEDS OF OUR PEOPLE.

Strategic Direction #1: Residents of FVHR will have access to health care services within an appropriate period of time.

Strategic Direction #2: FVHR programs will actively engage in opportunities for prevention/ health promotion.

Strategic Direction #3: Health services across the region will be provided in a seamless and coordinated fashion.

Strategic Direction #4: FVHR \will actively work \with other organizations, jurisdictions and ministries to advocate for changes that promoted healthy populations.

Strategic Direction #5: Identify priority services for program development or expansion and identify funding opportunities.

Strategic Direction #6: Develop a regional infrastructure that allows for the necessary environment to provide health services to our population.

Strategic Direction #7: FVHR will develop meaningful reporting information for patients/families; health care managers and decision makers and the Ministry of Health.

APPENDIX D(iii)

CANCER PROJECTION DATA

AREA 1			2000	% ><	2001	%><	2002	%><	2003	%><	2004	%><	2005	%<>	2006	%><	2007	%><	2008	%><	2009	%><	2010	%><	2011	%><	2012	Total%><
Vancouver			2334	1.24	2363	1.27	2393	1.38	2426	1.48	2462	1.58	2501	1.68	2543	1.81	2589	1.82	2636	1.93	2687	2.01	2741	2.08	2798	2.11	2857	
Burnaby			830	1.93	846	2.13	864	2.31	884	2.26	904	2.32	925	2.38	947	2.53	971	2.47	995	2.51	1020	2.55	1046	2.58	1073	2.61	1101	
Richmond			614	3.58	636	3.46	658	3.50	681	3.38	704	3.41	728	3.30	752	3.32	777	3.35	803	3.11	828	3.14	854	3.04	880	3.07	907	
North Shore			889	2.02	907	1.98	925	2.05	944	2.12	964	1.97	983	2.03	1003	1.99	1023	1.96	1043	2.01	1064	1.97	1085	1.84	1105	1.99	1127	
Coast Garibaldi			341	3.81	354	3.67	367	3.81	381	3.41	394	3.55	408	3.43	422	3.55	437	3.20	451	3.33	466	3.22	481	3.33	497	3.02	512	
Sub-total			5008	1.96	5106	1.98	5207	2.09	5316	2.11	5428	2.16	5545	2.20	5667	2.29	5797	2.26	5928	2.31	6065	2.34	6207	2.35	6353	2.38	6504	29.87

AREA 2			2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	Total%><
Fraser Valley			1109	2.52	1137	2.73	1168	2.65	1199	2.67	1231	2.88	1264	2.69	1298	2.62	1332	2.63	1367	2.56	1402	2.64	1439	2.57	1476	2.64	1515	
South Fraser			2231	3.41	2307	3.47	2387	3.56	2472	3.48	2558	3.52	2648	3.47	2740	3.47	2835	3.39	2931	3.31	3028	3.30	3128	3.32	3232	3.31	3339	
Simon Fraser			1149	3.74	1192	3.86	1238	3.96	1287	3.96	1338	3.96	1391	3.95	1446	3.87	1502	3.93	1561	3.84	1621	3.76	1682	3.75	1745	3.78	1811	
Sub total			4489	3.27	4636	3.39	4793	3.44	4956	3.41	5127	3.43	6303	3.41	5484	3.37	5669	3.35	5859	3.28	6051	3.27	6249	3.26	6453	3.29	6665	48.47

Sub Total - Area 1 + Area 2			9497	2.58	9742	2.66	10000	2.74	10274	2.74	10555	2.78	10848	2.79	11161	2.82	11466	2.80	11787	2.79	12116	2.81	12456	2.81	12808	2.83	13169	38.66

Norther Region Cancer Workload - Part of Vancouver Catchment

Northern Regions			2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	%><
North West			244		254		264		274		285		297		308		320		332		345		357		370		382	
Peace Laird			177		184		190		197		206		211		219		226		234		242		250		258		266	
Northern Interior			383		397		411		426		440		455		470		486		502		518		534		551		569	
Sun total			804	3.86	835	3.59	865	3.70	897	3.79	931	3.44	963	3.53	997	3.51	1032	3.49	1068	3.46	1105	3.26	1141	3.33	1176	3.22	1217	51.37

LOWER MAINLAND			10301	2.68	10577	2.72	10865	2.82	11171	2.82	11486	2.83	11811	2.85	12148	2.88	12498	2.86	12855	2.85	13221	2.84	13597	2.85	13985	2.87	14386	39.66
PLANNING TOTAL																												

Fully Admit Cases @ 75%			7726		7933		8149		8378		8615		8858		9111		9374		9641		9916		10198		10489		10790
Actuals	7945	8178																							0		
Current Capacity			7500		7500		7500		7500		7500		7500		7500		7500		7500		7500		7500		7500		7500
Unaccommodated Workload			226		433		649		878		1115		1358		1611		1874		2141		2416		2698		2989		3290

RADIATION THERPAY MACHINES					2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012
Cancer Cases			10301		10577		10865		11171		11486		11811		12148		12498		12855		13221		13597		13985		14386
RT Courses @ 60%			6181		6346		6519		6703		6892		7087		7289		7499		7713		7933		8158		8391		8632
Average # fractions			16.7		17		17.3		17.7		18		18.3		18.6		19		19.3		19.6		20		20.3		20.6
Fractions Required			103216		107865		112779		118636		124049		129685		135572		142477		148861		155479		163164		170337		177811
@ 8 Hour Days			14.336		14.98		15.66		16.48		17.23		18.01		18.83		19.79		20.68		21.59		22.66		23.66		24.70
@ 10 Hour Days			11.468		11.99		12.53		13.18		13.78		14.41		15.06		15.83		16.54		17.28		18.13		18.93		19.76
Machines available			11		12		12		12		12		12		12		12		12		12		12		12		12
Sortfall					0.01		-0.53		-1.18		-1.78		-2.41		-3.06		-3.83		-4.54		-5.28		-6.13		-6.93		-7.76

Note:The schedule for machine replacement will also constantly require one additional machine					-1		-1		-1		-1		-1		-1		-1		-1		-1

Eastern Valley Development Proposal											3		3		4		4		4		4		4		4		4
Vancouver Cancer Centre Additional Machine													1		1		1		1		1		1		1		1
Vancouver Cancer Centre Satellite Centre																							2		3		3

BC CANCER AGENCY SYSTEMIC WORKLOAD PROJECTIONS

Chemotherapy Projections

	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	10-11	11-12
CON Patients	1538	1547	1615	1686	1760	1838	1919	2003	2091	2183	2279	2380	2484	2594
Percentage Increase		0.6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
CON Increase over 2000-01					74	152	233	317	405	497	593	694	798	908
FVCC Patients	1769	2242	2406	2581	2770	2972	3189	3422	3671	3939	4227	4536	4867	5222
Percentage Increase		26.7	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
FVCC Increase over 2000-01					190	392	609	842	1091	1359	1647	1956	2287	2642
Total Increase in Workload to be Accommodated (patients)					264	544	841	1159	1497	1857	2240	2649	3085	3550

Potentially Accommodated in New Centre (Size of FVCC)*		0	0	297	615	953	1313	1696	2105	2500	2500
Remainder to be Accommodated by Expanded CON*		264	544	544	544	544	544	544	544	585	686
Allows for CON to expand until new facility available then holds constant until new facility at capacity (depending on size)											
*Obvioulsy these workloads can be mixed as appropriate											

Systemic May 2000
fmc

Appendix D(IV)

HISTORICAL ANALYSIS

SECTION 2: HISTORICAL ANALYSIS

Planning and design of the new MSA hospital project has been underway for over a decade. There were multiple options for each iteration of the planning process with due consideration given to factors such as patient care, impact on service delivery, cost to government, and future capacity. The planning process evolved from a requirement for an 80 bed expansion in the existing facility to the construction of a new 300 bed facility on a new site. Each planning event represented a significant investment of staff time and planning resources and community effort into the MSA Hospital. Planning and design activity culminated in 1997 when the project was put on hold. This section provides a brief overview of the planning process and evaluates the preferred options as identified during that time.

In **1987** the master plan was completed for site development at the existing hospital location and the Ministry of Health approved planning resources for an 80 bed addition that would provide a limited number of expanded programs and some additional services. Between **1987 and mid 1989,** seven design and planning options for the 80 bed expansion were developed (see attached *Diagram 1: Summary of Expansion Options*). The recommended solution was Option G as it was the best design fit to deliver the requirements of the 80 bed addition. However, Option G delivered the solution with several limitations including:

- Floor to floor heights of the existing facility were outmoded and restricted the type of medical and building technology required in the addition.
- These floor to floor heights did not match the floor to floor heights of the addition and created ramps that encumbered the movements of patients and staff.
- The high cost of the renovation and addition was approaching the cost of a new facility.

From **mid 1989 to March 1990** the schematic design was developed for option G. In **March/April 1990** the Ministry of Health requested an analysis of what the cost would be to develop a new facility on the existing site. **An Existing Building Evaluation Study** was completed in April **1990**. The report looked at the advantages and disadvantages of expanding the existing building versus construction of a new facility on the existing site. The conclusion of the study was that **a new hospital was the best solution.** *Appendix J: Existing Building Evaluation Study, April 1990* provides more detailed information on the analysis.

The study also considered the option of building a new hospital on the existing site versus a new site. The study concluded that the existing site would not provide optimal space for the hospital due to problems with having to phase the project, diagnostic and treatment areas would be delivered over 3 floors, the ECU would need to be displaced and structured parking would be required.

At the request of the Ministry of Health, in 1990, MSA hospital engaged a different design architect, who had not been involved in the development of the seven options, to take an objective look at the expansion option. The result of this analysis was Option J and included the following:

- Three major additions versus a single addition for Option G;
- Longer construction period of 54 months (therefore more disruption to the ongoing operation of the facility);
- Still retained the 11'0" floor to floor;
- No practical expansion for the Laboratory or Medical Imaging;
- Required demolition of the 1952 Wing;

- Provided expansion over existing operational space. This would be very disruptive to patie care; and
- Provided very limited expansion capability in the future.

In **July 1990**, the Minister of Health announced the approval of a new 300 bed facility. Design work on the new facility on the new site started in 1990. The CENTRAL FV Regional Hospital District purchased the property in **March 1991**.

Programming was revisited in late **1990/ 1991**. A new functional program was initiated at this time and completed in **1992**. This new functional program drove the commencement of the schematic design process in **1992**. Schematic design was completed in **October 1993** and the project cost estimate was $132.5 million. It was felt that the cost could be reduced. Design Development was completed in **mid 1994** with cost estimates of $137 million. Value Analysis was completed by **May 1995** resulting in savings of $2.55 million. Working Drawings were completed in **January 1996**. In February 1996 the Ministry approved the Contract Documentation Phase. 100% drawings, tender specifications and cost estimates were submitted to the Ministry in **October, 1997**. At this point the project was put on hold by the Ministry of Health.

A summary of the changes to bed numbers and costs is included below.

- Building blocks for vibrant communities that promote efficient land use and transportation practices?

Accommodates Updated Programs and Services – The option provides for up to date programs and services to 2015.

Site Accommodates the Cancer Centre– There is adequate space on the site to accommodate the requirements of a cancer centre (approximately 70,000 square feet) and provide the necessary diagnostic and inpatient support.

Meets Seismic and Building Codes– The option meets required codes.

Timely Delivery – Construction can occur in a timely fashion and project can meet required demand.

Minimal Disruption in Patient Care Activities –The option creates minimal disruption to patient care as it is being implemented.

Capital Cost – The cost of completing the project to the end of construction and commissioning

Operating Cost – The expected cost of operating the building (including programs and services).

Analysis of Alternatives

The following options have been identified as preferred options over the past 12 years. They are considered in the table below in the context of the criteria just discussed.

Option 1: Maintaining the Status Quo: Retain the existing structures; continue maintenance on an as needed basis. Do upgrades as permitted within the structure.

Option 2: Building an addition to the current structure (Option G – 80 beds): Construct a new expansion onto the existing structure to the west. Upgrades to existing building only in renovated areas. Renovations cannot upgrade existing structures to current standards.

Option 3: Renovation of existing building and 3 part addition (Option J): Construct three new expansions to the existing structure to the west, east (after demolition of the 1952 building) and some in fill construction. Upgrades to existing building only in renovated area. Expansion and renovations cannot upgrade existing to current standards as new structures are limited by the physical state of the existing structure.

Option 4: Construction of a new building on the existing site: Construct a new freestanding structure west of the existing building. Major services over 3 levels (2 levels optimal), new parking structure. Displacement of existing 150 ECU Beds.

Option 5: Construction of a new building on a new site: Construct a new freestanding structure, with expansion capability based on 1993 functional program.

Historical Analysis Recommended Option

The recommended option is to proceed with the construction of a new acute care facility on a new site.

This recommendation is consistent with the findings of the *Building Evaluation Study* of 1990, and the previous decision by the Ministry of Health in 1990 to proceed with a new construction/new site option.

The balance of this business case will focus on the options for new construction

APPENDIX D(V)

SUMMARY OF POTENTIAL HOSPITAL SITES

M.S.A. GENERAL HOSPITAL

April 11, 1990

SUMMARY OF POSSIBLE HOSPITAL SITES

Following a meeting with the two Municipal Planners for both Abbotsford and Matsqui, at which discussions surrounded the growth and development of the two Communities in the foreseeable future, the following is a summary of possible sites that were suggested for a new hospital.

One of the sites is the existing hospital property and two other sites are located nearby.

Existing Hospital Property

This property consists of approximately 14 acres and currently houses the existing 202 bed Acute Hospital and 150 bed Extended Care facility. Besides the aforementioned buildings, a large proportion of the property is occupied by parking lots with spaces for approximately 400 vehicles.

The property is bounded by McCallum Road to the East (500 foot frontage) and Bevan Avenue to the West and Cottage Lane to the South. The Extended Care facility including some parking and parkland, occupies approximately 4.5 acres.

McCallum Road serves as a direct link southwards to the freeway and northwards to Abbotsford City centre, where it joins South Fraser Way which is the East-West commercial corridor to Clearbrook Centre. The area is served by public transportation.

The property is well served by the basic resources such as electrical, water, sanitary and storm sewer.

Provincial Veterinary Laboratory Site

This property is located on an East-West corridor between McCallum Road and Clearbrook Road and consists of approximately 20-25 acres. It is understood that the property is owned by B.C. Building Corporation and currently houses a veterinary laboratory and poultry experimental station.

This property is bounded by Marshall Road to the North, the freeway to the South and Gladwin Road to the West (no exit). To the East, is the recently completed Maple Wood Lodge Intermediate Care Unit. The Menno Hospital/Home is located to the North on the other side of Marshall Road. The freeway access is available at both the McCallum Road interchange and Clearbrook Road interchange.

This property is approximately 1/2 mile radius from the existing hospital and is served by public transportation.

The property is also served by the basic resources such as electrical, major water, sanitary and storm sewer mains and is appropriately zoned.

. . . 2

Abbotsford Site (McKenzie and King Roads)

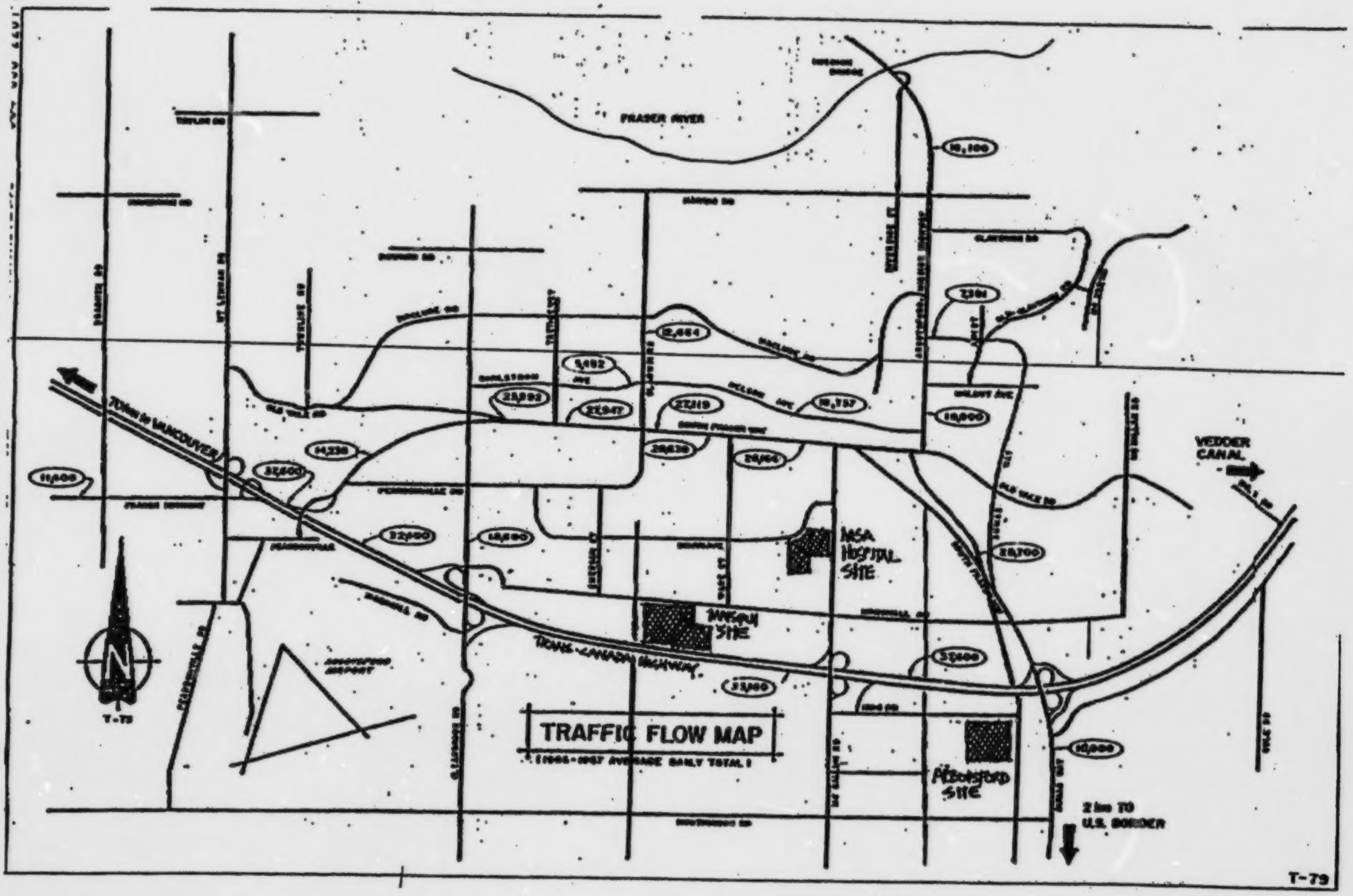
The property, a 20 acre parcel, is adjacent to a 250 acre parcel which is now before the Land Commission for removal from the Agricultural Land Reserve. This 20 acre parcel, which is not in the agricultural reserve, is privately owned and will have to be acquired.

The property is bounded by King Road to the North and Riverside Road to the East. The Fraser Valley College is located West of McKenzie Road. The property is in a largely agricultural area with limited residential property nearby.

The property is approximately 3/4 mile radius from the existing hospital and is not served by public transportation. The main link to the commercial cores of Abbotsford and Clearbrook centres would be via McCallum Road, a secondary route would be via King and Riverside roads, although, not very direct. Freeway access is available at the McCallum interchange.

The property is served by basic resources such as electrical, water, sanitary and storm sewer, although, the size of the mains are unknown at this time.

Attached is a map of the area showing the locations of the three sites as discussed.



TRAFFIC FLOW MAP

(1986-1987 AVERAGE DAILY TOTAL)

FRASER RIVER
VEDDER CANAL
2 km TO U.S. BORDER
70km to VANCOUVER
TRANS-CANADA HIGHWAY
NSA HOSPITAL SITE
MATSQUI SITE
ABBOTSFORD SITE
ABBOTSFORD AIRPORT
10,100
7,391
12,464
3,492
23,992
21,947
27,119
10,737
19,000
26,836
24,164
14,238
32,600
11,600
32,000
18,600
28,700
37,600
33,160
10,000
N
T-79

T-79

APPENDIX E

CRITERIA AND EVALUATION OF THE CONSTRUCTION OPTIONS

Potential new construction solutions were evaluated as a low, medium or high fit using the following criteria:

Fit on Site - site master plan can fit all buildings including expansion capability, parking and site services economically and satisfy functional requirements.

Operational Rating - solution provides a structure that is efficient and effective operationally.

Functional Fit - the solution creates an environment that enables optimal functional fit between organizations and specific programs.

Expandability - the solution allows for expansion within and external to the building envelope.

Structure/Architecture - building has a good exterior envelope, (i.e. provides comfort, energy efficient, durable, require minimal maintenance). Architecture delivers a healing environment that promotes wellness through quality design of space, lighting, colour, material selection and building systems. Economical structure that minimizes capital cost yet delivers a very good functional fit.

Capital Cost - cost and delivery of project requirements are optimized.

Operating Cost - estimated operating cost to both the hospital and Cancer Centre. This takes into account relative increases or decreases to each party based on the design (attached directly versus via pedway, etc.).

Reuse of Existing Design - current design includes all of the design work to 1997. Examples of some items of reuse include:

- site investigations highway noise studies, water retention for the 100 year storm, soils, survey, existing tree survey, zoning & municipal requirements;
- some fire protection concepts;
- user group reviews and data (areas of change will require user involvement);
- functional requirements, room layouts & configuration;
- room by room detailing – modular architectural woodwork, laboratory modular design, wall protection detailing etc.;
- some specification & material investigations;
- some equipment co-ordination;
- information and data collection for preparation of door, hardware, finish and colour schedules;
- electrical and mechanical system concepts;
- mechanical and electrical room requirements and detailing – lighting concepts; and
- mechanical and electrical specifications relating to fittings and fixtures.

Evaluation of New Construction Options

Evaluation Criteria	Option 1: Build Original Design and Renovate Once Complete (no BCCA)	Option 2: Build Original Design and put Cancer Centre on site	Option 3: Redesign, Add Less Costly Building and Attach Cancer Centre	Option 4: Complete Redesign (less costly Building concept included) with Cancer Centre Attached
Fit on Site	Good	Poor[1]	Good	Good
Operational Rating (Hospital + BCCA)	Very Good + Poor[2]	Fair + Fair[1]	Very Good + Very Good	Very Good + Very Good
Functional Fit	Very Good	Fair – Good[3]	Good[4]	Good[4]
Expandability	Good	Poor[5]	Fair[6]	Fair[6]
Structure/ Architecture	Good	Good	Good – Very Good	Good – Very Good
Capital Costs	Good[7]	Fair	Very Good	Good
Operating Costs (Hospital + BCCA)	Good + N/A	Good + Poor	Very Good + Very Good	Very Good + Very Good
Re-use of Existing Design	Very Good[8]	Very Good	Good	Poor[9]
Project Schedule	Very Good[10]	Very Good [10]	Good	Extremely Poor[11]

Notes:

[1] Fit on site is poor, operational rating is fair and as the two buildings cannot be directly linked – a pedway or other connection would need to be constructed to provide indoor access from one building to the other.

[2] Hospital has very good rating as it is stand alone and is designed for hospital programs. Cancer Centre does not exist in this option therefore, poor operational rating.

[3] Functional fit is very good for the hospital but only fair for BCCA as access to the hospital is more remote than is desired. Patients, families and staff would need to travel through the building link to access services on a regular basis.

[4] Rating is reduced from very good in option 1 to good in options 3 and 4 as compromises have to be introduced to make a smaller hospital building work. It should be noted that the very good rating in option 1 does not include a cancer centre.

[5] Poor expandability as buildings have been 'fit' into the site rather than planned for in conjunction with one another and with patient and staff parking and movement accounted for.

[6] Expandability is somewhat better in options 3 and 4 than in option 2, but only receive a fair rating. This is not anticipated to be a problem as patient needs for this site for both acute care and cancer services have been included to 2015. Again the good rating for option 1 is due to the fact that there is no cancer centre included in this option.

[7] Capital cost appear good partly because there is no cancer centre included in this option and partly because of the extensive renovations that would be required to meet the programming needs.

[8] Reuse of existing design is very good as this option assumes building exactly what is designed to date. It must be noted that extensive renovations will be required post construction to meet programming needs and that this option does not include a cancer centre.

[9] Reuse of existing design is poor as this option assumes starting again from scratch and ignoring any work to date.

[10] Project schedule is very good for options 1 and 2 as the existing plans can be started as soon as they are brought up to code requirements. There is no cancer centre in option 1 and option 2 assumes that the cancer centre construction could lag behind the hospital.

[11] Project schedule is extremely poor as this option means starting again with all user group meetings and conceptual design.

Appendix F

CURRICULUM VITAE

CURRICULUM VITAE

ROBERT BILLINGTON

QUALIFICATIONS:

Bachelor of Architecture, Texas A & M University
Master of Architecture, Texas A & M University
Canadian College of Health Service Executives
Registered Architect, State of Washington
Certified, National Council of Architectural Registration Boards
Certified, Royal Architectural Institute of Canada
Member, Architectural Institute of British Columbia
Member, American Institute of Architects
Member, AIA Academy of Architecture for Health
Member, AIBC Healthcare Facilities Committee
Travel/Study Scholarship to England and Europe, Association of Collegiate Schools of Architecture Exchange Student Program
Health Facilities Research Scholarship/Grant, Texas A & M University
Travel/Study Scholarship to Sri Lanka, USS HOPE Ship
Direct Commission, Lieutenant, Navy Surgeon General's Office, U.S. Navy
Canadian Architect Yearbook Award (for British Columbia Medical Centre)
First Place Design Award, American Institute of Architects Health Facilities Review (for Saskatoon City Hospital)

EXPERIENCE:

1976 - Present

Partner/Project Director – The RPG Partnership (previously known as Resource Planning Group Inc., Vancouver

For a variety of projects, including master planning, functional programming, site and facility evaluations, and design consultation.

1979 - 1992

Principal/Partner/Project Director – Billington Poon Architects, Vancouver (subsequently renamed Poon Gardner Billingnnormalton Architects)

For a variety of health care and education projects ranging in size from an addition to a small 30-bed rural health centre to replacement of a 488-bed community teaching hospital and a new Student Services Centre to the University of British Columbia campus.

1974 - 1976

Programmer/Planner/Designer - Arthur Erickson Architects, Vancouver

For a major new medical centre in Vancouver, Canada to consist of a child and maternal centre of 350 beds and adult centre of 500 beds and for 2 secondary schools. Roles included master planning, functional programming and schematic design.

1971 – 1974	**Senior Programmer/Designer and Associate – Caudill Rowlett Scott/Architects & Planners, Houston, TX** On a number of health care and education projects in the continental USA and overseas.
1968 - 1971	**Officer-In-Charge Of Programming and Design Coordination – United States Navy, Surgeon General's Office, Washington, DC** For a number of Naval health facility projects in the continental USA, Hawaii and overseas. These included dispensaries (clinics), dental clinics and hospitals ranging in size from 50 beds to 2,000 beds.
1968	**Architect Intern - USS H.O.P.E. (Health Opportunities for People Everywhere) Ship Colombo, Sri Lanka** In charge of preparing information regarding cultural/local context and master programming (Design Brief) for a new 800-bed teaching hospital for the Faculty of Medicine, University of Sri Lanka.

CURRICULUM VITAE

FRANCES M. CARUTH

QUALIFICATIONS:

Banff School of Management Executive Program, 1989
M.Sc., Health Services Planning & Administration, UBC, 1987
B.Sc., Rehabilitation, University of Toronto, 1980
Member, Canadian College Health Services Executive
Clinical Associate Professor, Faculty of Medicine, UBC Health Care & Epidemiology

EXPERIENCE:

1990 – Present

BC Cancer Agency
Vice President, Planning (1995 – Present)
Director, Planning & Development (1990 – 1994)
Lead client representative in the development of:

- Vancouver Island Cancer Centre, 2001
- Gene Sequencing Start-up Laboratory, 1999
- Cancer Centre for the Southern Interior, 1998
- Fraser Valley Cancer Centre, 1995
- Additional vaults, VCC
- Multiple high tech equipment installations
- Planning for the BC Cancer Research Centre

1986 – 1990

Vancouver General Hospital
Director, Management Support Programs
Efficiency Enhancement/Process Improvement Programs
Developed Lotus-based micro-costing system for high cost procedures

1983 – 1986

Vancouver Teaching Hospitals
Analyst
Management Engineering Unit 13.1

Prior to 1982

Physiotherapist
Range of roles as clinician and/or manager/teacher in acute and long-term care rehabilitation

CURRICULUM VITAE

JERRY FRANK

QUALIFICATIONS	University of British Columbia, B.Arch., 1977 University of Calgary, B.Sc., Pure Mathematics, 1974 Architectural Institute of British Columbia Royal Architectural Institute of Canada Alberta Association of Architects BC Building Envelope Council Architecture for Health Committee, RAIC
EXPERIENCE *With Architectura:*	***Health Care*** MSA General Hospital, Abbotsford, BC MSA Hospital Feasibility Study, Abbotsford, BC Surrey Memorial Hospital Ambulatory Care Centre Expansion, BC Surrey Memorial Hospital Master Plan 1991, Surrey, BC ***Other Projects*** YVR Parkade, Vancouver, BC Glenayre Electronics Expansion, Burnaby, BC British Columbia Systems Corporation Expansion Study, BC
With other firms:	***Office*** Jeanne & Peter Lougheed Building, Banff, AB Court of Queens Bench (250,000 sq. ft.) DND Medical/Dental Facilities, Suffield, AB Calgary Winter Club Master Planning, Calgary, AB Trans Alberta Utilities Corporate Head Office, Calgary, AB (450,000 sq. ft.) MEPC, Morguard Properties (150,000 sq. ft.) McFarlane Tower (132,000 sq. ft.) Calgary Family and Youth Courts, Calgary, AB Bankers Hall Calgary, AB Trans Alta Utilities Corporate Office, Calgary, AB Court of Queen's Bench, Calgary, AB ***Health Care*** Windermere District Hospital, Invermere, BC Holy Cross Hospital, Calgary, AB Red Deer Regional Hospital, Red Deer, AB ***Education*** Scurfield Hall, University of Calgary, AB Mount Royal College, Calgary, AB

CURRICULUM VITAE

ALAN HARTLEY

QUALIFICATIONS:	University of Toronto, Bachelor of Architecture, 1979 Regent College, Dip. C.S., 1983 American Institute of Architects Architectural Institute of British Columbia Royal Architectural Institute of Canada Urban Development Institute

EXPERIENCE:

1988 - Present — *Architectura* Planning Architecture Interiors Inc., Vancouver, BC

Airports

Vancouver International Airport, Retail Design, Vancouver, BC
Lester B. Pearson Airport, Toronto, ON – Retail Design
Chicago, Midway Airport, Chicago, IL – Retail Planning
San Antonio Airport, San Antonio, TX – Retail Planning
Nashville Airport, TN – Retail Planning
Vancouver International Airport, Vancouver, BC – Retail Planning

Office

Glenayre Manufacturing and Office, Vancouver, BC
H.A. Simons Building, 111 Dunsmuir, Vancouver, BC
Angus Corporate Centre Office Buildings, Vancouver, BC
1138 Melville St. Office Building, Vancouver, BC
RCMP E. Division Northern Headquarters, Prince George, BC

Retail

Canwest Mall, Victoria, BC
Broadmead Village Shopping Centre, Victoria, BC
Parkgate Village Shopping Centre, North Vancouver, BC
Ikea, Vancouver, BC

CURRICULUM VITAE

PETER G. KALLOS

QUALIFICATIONS:

B. E. S. University of Manitoba 1972.
M. Arch University of Manitoba 1976
Registered Architect in British Columbia
Member of Royal Architectural Institute of Canada

EXPERIENCE:

1991 - Present	**Senior Project Manager - BCBC, Victoria** Major School Projects, School District 69, Qualicum Historic Restoration of St. Ann's Academy, Victoria Tenant Improvement Project, Library Square Vancouver Two Phases of Kutenai Place, Nelson Assorted commercial lease development projects for Ministries of Health, Education, Children and Families, Environment, Labour Relations Board, Ombudsman,
1979 - 1991	**Director, Project Development - SHC, Regina** Responsible for development and construction programs resulting in 1000 units per year for each calendar year.
1978 - 1979	**Architect, Winnipeg Airport Systems Study** Task force responsible for programming major expansion to/replacement of the Winnipeg International Airport.
1976 - 1978	**Graduate Architect, MMP Architects, Winnipeg.** Design Architect for assorted Civic, Commercial and Residential projects.
1974 - 1976	**Student (summers) MMP Architects, Winnipeg** Worked on wide range of projects including RCMP Headquarters, Sandy Bay golf course residential develpoment
1972 - 1974	**Student Architect with Fingold Associates, Winnipeg** Hotel and restaurant projects across Canada

CURRICULUM VITAE

BRUCE L. RABER

QUALIFICATIONS:

B. E. S. University of Manitoba 1976.
M. Arch University of Manitoba 1979
Registered Architect in British Columbia, Alberta, Manitoba
Member of Royal Architectural Institute of Canada
Associate Member of the American Institute of Architects
Member Joint AIBC/Ministry of Health-Health Care Committee
Symposium on Health Care Design -Program Advisory Council

EXPERIENCE:

1997 - Present

Stantec Architecture, Vancouver-Managing Principal
Scarborough Hospital, Tobago
The Richmond Hospital
Surgical Suite Upgrades
Diagnostic Imaging Expansion-Phase 3
Maternity and Pediatrics study
Port of Spain Hospital Renovations, Trinidad
Brandon Regional Hospital Expansion Project
Vancouver General Hospital
Tower Completion Project
Radiology Department
Trauma Special Care Unit
Site Services
Pulmonary Function Laboratory
Hyperbaric Unit Relocation
On-Call Suites
Cardiac Cath Expansion
QLT Research Facility, Vancouver
Neonatal Intensive Care, Royal Alexandra Hospital
Vancouver Richmond Health Board Facilities Management Program

1993 - 1997

WSAG Architects, Vancouver, Managing Partner
Vernon Jubilee Hospital ER and Surgical Suite Renovations
BC Research Institute for Child & Family Health, Vancouver
Inex Pharmaceuticals Laboratory, Burnaby
Surrey Memorial Hospital Phase III
Vernon Hospital Master Plan
Hotel de Health, Anguilla, B.W.I.
The Richmond Hospital
Phase II Expansion

	Screening Mammography Surgical Daycare and PAR ICU Expansion Nuclear Medicine Addition Surgical Suite Renovations St. Paul's Hospital Renovation Projects, Vancouver
1986 - 1993	**WSAG Architects, Edmonton-Principal** Chilliwack General Hospital Redevelopment Studies Royal Alexandra Hospital Diagnostic, Critical Care, & Treatment Centre, Edmonton Office for Three Doctors, Edmonton Dr. Cook Extended Care Centre, Lloydminster South Wing Extension, Misericordia Hospital, Edmonton
1983 - 1986	**Architect, SMR Architects, Edmonton (MMP Architects, Winnipeg).** Design and Project Architect for assorted Commercial and Residential projects.
1982 - 1983	**Architect, Cullen Carter and Hill, Nottingham, England** Design and project Architect for assorted residential projects
1979 - 1982	**Graduate Architect with Thorkellson Architects and Wyness Architects in Edmonton** Project and design architect on commercial, residential, institutional and religious projects

CURRICULUM VITAE

PETER SALUSBURY

QUALIFICATIONS

Diploma, Building Technology, B.C.I.T., 1979
Certified Professional Program, City of Vancouver, BC
Code Advisory Committee, BC Building Code, 1990 & 1998
Applied Science Technologists and Technicians of BC, 1988

EXPERIENCE

1986 - Present	**Architectura Planning Architecture Interiors Inc.**, Vancouver, BC Principal
1980 - 1986	**Isaac-Renton Architects**, Vancouver, BC Project Manager focussed on multi-level care facilities

Projects
Burnaby Youth Custody Centre — Facility Development Study
Victoria Youth Custody Centre, V.A. Shadow Team Member (Corrections Specialist)
Burnaby Youth Custody Centre and Youth Forensic Psychiatric Centre, Burnaby, BC
Prince George Regional Correctional Centre, Prince George, BC
Matsqui Institution, 120-bed medium-security living unit, Matsqui, BC
RCMP Northern BC Headquarters, Prince George, BC
RCMP Penticton Detachment, Penticton, BC
MSA General Hospital, Matsqui, BC (Design Development Team)
Louis Brier Home and Hospital, Vancouver, BC
Surrey Memorial Hospital Ambulatory Care Expansion, Surrey, BC
Duke Point Ferry Terminal, Nanaimo, BC

CURRICULUM VITAE

KAIEN SHIMIZU

QUALIFICATIONS:

Doctorate in Architecture, University of Michigan

- Bachelor of Architecture, University of British Columbia Bachelor of Science (Civil Engineering), University of Alberta
- Member, Architectural Institute of British Columbia
- Wells Bennett Scholarship, University of Michigan

Institute of Environmental Studies Fellowship, Rockefeller Foundation, University of Michigan

EXPERIENCE:

1999 - Present

Principal - The RPG Partnership, Vancouver

For a wide variety of projects including the functional programming for DND Detentions Barracks, University Health Network Research Laboratories, BC Cancer Research Centre, and the Royal Alexandra Hospital Ambulatory Care Centre.

1975 - 1999

Partner - The APRA Group Inc., Vancouver

For a wide variety of projects including master planning, functional programming, site and facility feasibility studies, and design consultation. Projects ranged from the Resort Municipality of Whistler Master Plan to the Canadian Science Centre for Human and Animal Health.

1994 - 1975

Programmer/Planner – Erickson Architect

Shaughnessey Hospital Redevelopment, master program.

1970 - 1974

Doctoral Student – University of Michigan, Doctor of Architecture

Graduate Program
Research Projects:

Institute of Gerontology – facilities program and master plan for the Chelsea Methodist Home
University of Michigan Health Centre – computer based simulation model for Health Maintenance Organization
Planning for Cardiac Care: computer model for CCU beds
Dissertation of "New Generation of Single Resource Based Communities.

1968 - 1970

Project Architect – McCarter Nairne and Partners

Kitimat planning for new subdivision.
Port Hardy master plan for new subdivision.
Whitehorse Elementary School contract documents.
Shaughnessey Golf Course Site Master Plan for Housing.

1965 - 1968

Design Architect – George Barnes Architect

Kelowna Airport design and contract documents.
Kelowna Golf and Country Club, design and contract documents.
Kelowna Secondary High School, contract documents.
Various private houses design and working drawings.

1963 - 1965

Design Architect – Don Bittorf Architect
Harry Ainley High School design and contract documents.
Various private houses design and contract documents.

CURRICULUM VITAE

MIKE WHITE

QUALIFICATIONS: Bachelor of Architecture, Cambridge University

EXPERIENCE:

1986 - Present	**Project Manager / Senior Planner – The RPG Partnership, Vancouver** On a wide variety of planning projects ranging from 1,000-bed tertiary care health centres to 20-bed rural community health centres. In particular, developed a special planning knowledge of the high-tech diagnostic and critical care areas. Managed or has been a senior planner/ programmer on over 50 healthcare facilities planning projects in British Columbia, Alberta, Saskatchewan and Ontario.
1984 - 1986	**Project Manager / Senior Planner - Billington Poon Architects, Vancouver** (subsequently renamed Poon Gardner Billington Architects) For a variety of health care projects ranging in size from an addition to a small 30-bed rural health centre to replacement of a 488-bed community teaching hospital.
1981 - 1984	**Senior Medical Planner - Thompson Berwick Pratt & Partners, Vancouver** For the Vancouver General Hospital Redevelopment project.
1977 - 1981	**Senior Medical Planner - Brewer Smith Brewer Maxwell, United Kingdom** On numerous health care projects in UK, Canada, Australia, West Africa, Saudi Arabia and Kuwait.
1968 - 1977	**Medical Planner - Hospital Design Partnership, United Kingdom** For numerous health care projects in the UK and West Africa, including the development of the UK standard hospital planning systems known as Best Buy, Harness and Nucleus.

Appendix G

SPACE REQUIREMENTS SUMMARY

SPACE REQUIREMENTS SUMMARY

THE TABLE BELOW ILLUSTRATES GROSS AREAS IN SQUARE METRES (CGSM) FOR EACH SERVICE CATEGORY OF FACILITIES, FUNCTIONAL COMPONENT (CGSM) AS WELL AS THE BUILDING GROSS SQUARE METRES (BGSM) FOR THE FVHC/EFVCC BUILDING(S) AS A WHOLE, AS MASTER PROGRAMMED, AS REVISED FOLLOWING A PROGRAM VALUE ANALYSIS/REVIEW BY KPMG CONSULTANTS, AND AS CURRENTLY FACILITY PROGRAMMED.

Caveats to Note:

This is not a final space summary as we have not had our final meetings with user group teams nor have we received future (2015) staffing headcount figures from FVHR for use in finalizing both office and staff locker/washroom requirements, but it would appear that we will easily remain within the gross area allowable for the FVHC.

9.0 FRASER VALLEY HEALTH CENTRE

	1. 2000 Master Program GSM	2. 2000 Post-Program VA GSM	3. 2001 Facility Program GSM	Variance 2. to 3. GSM
A High/Medium Serviced Facilities (Post Disaster)				
A1 General Medical/Surgical Inpatient Units	5 735	6 135	5 961	- 174
A2 Maternal Child Program	4 687	3 912	3 429	- 483
A3 Mental Health/Psychiatry Program	3 337	2 537	2 285	- 252
A4 Palliative Care Unit	600	600	676	+ 76
A5 Critical Care Units	1 600	1 200	1 930	+ 30
A6 Emergency	1 475	1 475	1 461	- 14
A7 Surgical Suite	1 965	1 965	1 754	- 211
A8 Medical Imaging	2 200	2 200	2 463	+ 263
A9 Laboratory Medicine	1 500	1 250	1 345	+ 95
A10 Morgue/Autopsy	190	190	146	- 44
A11 Biomedical Engineering	194	194	332	+ 138
Subtotal Component Area, A	23 483	21 658	21 782	+ 124
B Low Serviced Facilities (Post Disaster)				
B1 Surgical Day Care/Same Day Admit	760	760	618	- 142
B2 General Day Care Unit	800	800	879	+ 79
B3 Diagnostic Services Centre	493	493	809	+ 316
B4 Pharmacy	650	650	689	+ 39
B5 Health Information Management	838	838	1 007	+ 169
B6 Volunteers/Auxiliary Services	102	102	101	- 1

	1. 2000 Master Program GSM	2. 2000 Post-Program VA GSM	3. 2001 Facility Program GSM	Variance 2. to 3. GSM
B7 Spiritual Care Services	90	90	89	- 1
B8 Main Entry Facilities	400	400	329	- 71
Subtotal Component Area, B	4 133	4 133	4 521	+ 388
C Low Serviced Facilities (Non Post Disaster)				
Wellness Centre	1 207	Incl.. in C1	Incl. in C1	Incl. in C1
Outpatient Clinics	435	Incl.. in C1	Incl. in C1	Incl. in C1
C1 Ambulatory Care Centre	--	1 810	1 433	- 377
Pre-Admission Clinic	348	300	Incl. in C1	Incl. in C1
C2 Rehabilitation Services	400	400	453	+ 53
C3 Site Administration	570	570	433	- 137
C4 Education Facilities	470	470	791	+ 321
C5 Renal Services	680	680	809	+ 129
Subtotal Component Area, C	4 110	4 230	3 919	- 311

	1. 2000 Master Program GSM	2. 2000 Post-Program VA GSM	3. 2001 Facility Program GSM	Variance 2. to 3. GSM
D Industrial/Shop Facilities (Post Disaster)				
D1 Nutrition and Food Services	2 127	2 127	2127[1]	--
D2 Materiel Services	1 340	1 340	1 098	- 242
D3 Ambulance Station	(460)	(460)	(460)	--
Subtotal Component Area, D	3 467	3 467	3 225	- 242
E Industrial/Shop Facilities (Non Post Disaster)				
E1 Plant Services	440	440	431	- 9
E2 Linen/Housekeeping Services	455	455	439	- 16
E3 Central Staff Facilities	0	0	300[2]	+ 300
Subtotal Component Area, E	895	895	1 170	+ 275
F Regional/Other Facilities (Non-Post Disaster)				
F1 Regional Administration	(1 866)	(1 866)	(1 746)	(- 120)
F2 Regional Materiel Services (Warehouse)	(3 500)	(3 500)	(1 897)	(- 1 603)
F3 Child Day Care Facility	(200)	(200)	(200)	--
Subtotal Component Area, F	(5 566)	(5 566)	(3 843)	(- 1 723)
Total Component Gross Area	36 088	34 958	**34 617**	**- 341**
Unassigned Gross Area (Incl. mech., ext. wall, major circulation, etc.)	12 912	11 700	12 041	+341
Public Links/Corridors		991	991	--

	1. 2000 Master Program GSM	2. 2000 Post-Program VA GSM	3. 2001 Facility Program GSM	Variance 2. to 3. GSM
	991			
TOTAL FVHC BUILDING GROSS AREA	**49 991**	**47 649**	**47 649**	--

Notes:

Areas in (brackets) have not been included in the Total Component Gross Area or the Total Building Gross Area as they are to be considered outside this project funding.

1 Nutrition & Food Services is currently under review by a Food Services Consultant so this area is subject to change.

2 Central Staff Facilities is very preliminary as it is subject to the future (2015) staffing currently being estimated by FVHR.

10.0 EASTERN VALLEY CANCER CENTRE

	1. 2000 Master Program GSM	2. 2000 Post-Program VA GSM	3. 2001 Facility Program GSM	Variance 2. to 3. GSM
G High/Medium Serviced Facilities (Non-Post Disaster)				
G1 Radiation Therapy	1 850	1 850	1 420	- 430
G2 Tx Planning	660	660	730	+ 70
G3 Dentistry	25	25	**54**	+ 29
Subtotal Component Area, G	2 535	2 535	**2 204**	- 331
H Low Serviced Facilities (Non Post Disaster)				
H1 Entry Facilities	160	160	225	+ 65
H2 Patient Resources	180	180	65	- 115
H3 Patient Counselling	200	200	240	+ 40
H4 General Clinic Area	700	700	**915**	+ 215
H5 Systemic Therapy Area	220	220	**290**	+ 70
H6 Pharmacy	130	130	**135**	+ 5
H7 Clinical Trails Office	80	80	**105**	+ 25
H8 Medical Staff Office	540	540	**660**	+ 120
H9 Patient Information Management	300	300	**415**	+ 115
H10 Administration	180	180	**155**	- 25
H11 Staff Support	125	125	**145**	+ 20
H12 Clinical Support	125	125	**160**	+ 35
Subtotal Component Area, H	2 940	2 940	**3 510**	+ 570

	1. 2000 Master Program GSM	**2.** 2000 Post-Program VA GSM	**3.** 2001 Facility Program GSM	Variance 2. to 3. GSM
Total Component Gross Area	5 475	5 475	**5 714**	**+ 239**
Unassigned Gross Area (Incl. mech., ext. wall, major circulation, etc.)	1 370	1 370	1 396	**+ 26**
TOTAL EFVCC BUILDING GROSS AREA (BGSM)	6 845	6 845	7 110	**+ 265**

Appendix H

Project Overview Section of the Facility Program

Fraser Valley Health Region / BC Cancer Agency

Fraser Valley Health Centre
and
Eastern Fraser Valley Cancer Centre

Project Overview Section
# of the
Facility Program

INTRODUCTION

This Project Overview provides an assembly of key information presented in later sections of this document. Concepts, assertions, assumptions and conclusions are highlighted here because of their strategic importance to both Centres' future development. Readers are encouraged to refer to the main sections for background information supporting the factors cited below.

Due to the amount of time involved in conceiving, planning, constructing and occupying a building, early planning initiatives are often forced to look well into the future, sometimes as much as 10 to 15 years. Obviously, no one has a perfect vision of the future; however, in order for a facility to evolve, there must be some generally accepted targets or "fixes" upon which to based decisions. These fixes start with understandings about what functions a facility will accommodate in the future and how it will accommodate these. Later, decisions are made about the amount of space required to house all of the functions and how different space types will relate to one another.

This process accepts the premise that understandings of the future will change over time. A changing picture of the future, however, does not impede the planning process since it is only by adopting the most current understanding of the future that those involved in facility development can:

- have a basis on which to make decisions today;
- move the facility development process beyond the conceptual stages and into funding approval, design and construction, and;
- have a basis on which to reassess and/or revise facility-related decisions in the future.

The information that follows should be considered as the best understanding of the future available at the time of this document's preparation. As new information becomes available, the concepts, assertions, assumptions and conclusions should be reassessed with the explicit intent to determine the impact of any changes on the proposed new facility.

PROGRAM PARAMETERS SUMMARY

The purpose of this section is to document health program planning factors having a substantial influence on the development of the Facility Program. For more detail, please refer to the Project Definition Report dated September 27, 2000.

The map below illustrates the Local Health Areas (LHA's) which constitute the Fraser Valley Health Region.

Service Area

The Fraser Valley Health Centre (FVHC) will continue to serve two overlapping catchment areas. A community catchment area, which is comprised principally of Local Health Area 34 Abbotsford, which will continue to serve patients seeking primary and secondary care. Selected secondary and tertiary programs and services at FVHC will draw from a much wider area encompassing the Fraser Valley Health Region (FVHR) as a whole and perhaps surrounding regions.

Demography

Source: PEOPLE 25

The following table illustrates historical and projected populations for the Abbotsford LHA, the FVHR and the Province of British Columbia. These numbers were used for facility programming purposes for the FVHC portion of the project.

	Abbotsford LHA 34	FVHR (incl. LHA 34)	BC (incl. FVHR)
1996	116,176	231,345	3,882,043
2000	116,176	243,175	4,067,179
2005	127,618	267,935	4,372,208
2010	139,601	296,511	4,898,030
2015	152,019	327,187	5,052,562

Over the 15 years, from 2000 to 2015, the FVHR population is expected to increase 36.2% compared to 25.6% for BC. LHA 34 Abbotsford comprises almost 50% of the population of the FVHR.

The population base served by the existing cancer centres in Vancouver and Surrey, plus the new Eastern Fraser Valley Cancer Centre (EFVCC) in Abbotsford will include the Lower Mainland and all of the North.

Planning Horizon

Facility planning for the FVHC will be based upon conditions estimated to exist in 2015. The Facility Program for the EFVCC will be based on establishing a service capacity which is anticipated to be fully achieved between 2008 and 2012.

Major Roles

Three major roles have been identified for further development at the new site.

1. The FVHC will continue to function as a **community health centre**, which includes a coordinated network of on-site and off-site services. The latter may include outreach services of the FVHR or community-based services operated by other agencies, but in cooperation with the Region. Preventative and care services will respond to the health care needs of population groups served by the Centre (e.g., specific ethnic/cultural groups, the geriatric community, the chronically mentally ill, children and adolescents, etc.), as well as meet the regional targets of 90% or higher of non-surgical and 85% of surgical service demand by 2010. Education and research activity will focus on the health needs of the Region's residents and staff.
2. The FVHC will add a number of **new programs** to augment and enhance existing programs and to better rationalize service delivery on a regional basis and to reflect a 'closer to home' care philosophy (e.g., renal dialysis, vascular surgery, enhanced medical imaging services, including MRI, nuclear medicine and echocardiography, child and adolescent mental health services, etc.), while also maintaining strong inter-regional relationships with Simon Fraser, South Fraser and Vancouver regions to ensure timely and appropriate access to services not planned for within the region (e.g., neurosurgery, cardiac and thoracic surgery, specialized pediatric surgery, etc.).
3. The site will also accommodate a new **regional cancer centre**, which together with the Surrey and Vancouver Centres, will serve the population of the Lower Mainland and the North of BC.

Ambulatory Care

The FVHR/BCCA will greatly expand their role in ambulatory care by offering a comprehensive array of outpatient/day programs, community, and social services responding to existing and future new care programs, including:

- Surgical Day Care/Same Day Admit
- Pre-Admission Clinic
- General (Medical) Day Care (incl. Endoscopies)
- Child Health Services
- Generic Multi-Use Clinics
- Renal Services
- Cancer Care Services

Inpatient Care

The table below illustrates existing MSA General Hospital beds as of August 2000 and the planned future FVHC beds envisioned to the year 2005 and 2015.

Type	Existing Beds (2000)	Planned Future Beds 2005	Planned Future Beds 2015
General Purpose Units			
Medical	76	132	142
Surgical	38		
Surgical Step Down	4	8	8
Oncology	-	5	10
Subtotal, General Purpose Units	118	145	160
Special Purpose Units			
Obstetric, Ante/Postpartum/LBRP	21	24	28
Pediatric	18	18	18
Psychiatric	20	33	40
Intensive/Coronary/Telemetry	22	27	34
Palliative	-	7	10
Subtotal, Special Purpose Units	81	109	130
Total Beds	199	254	290
Neonatal Care			
Special Care	5	7	10
Total, Isolettes	5	7	10
TOTAL	**204**	**261**	**300**

Education

The FVHC/EFVCC will host both undergraduate and graduate students from medical and nursing programs. Technical and professional trainees in the allied health disciplines will also be accommodated on-site for the practicum phase(s) of their curricula.

Research

The FVHC/EFVCC will actively promote on-site clinical research. Clinical research protocols will encompass epidemiological-type studies as well as clinical trials; the latter may be coordinated through established clinical programs or may be conducted as independent protocols.

KEY DEVELOPMENT CONCEPTS

The following development concepts are key in understanding major planning criteria related to the needs of patients, staff, and visitors which impact on the site as a whole.

Healthcare Campus

A trend in hospital planning and design has been to view the concept of hospital as a single building entity. Solutions that resulted in facilities of 1.5 to 2.0 million square feet were not uncommon. The result was floor plates with very large areas that were designed to provide significant opportunities to expand individual departments in response to changing demands (e.g., by locating "hard" spaces next to "soft" spaces). Conversely, departments located deep within the floor plates and not adjacent to exterior soft space (or walls) required the relocation of other departments in order to accommodate any expansion. This domino effect resulted in increased cost to an expansion project and in some cases to its cancellation. Alternatively, compromise solutions were developed that physically split the department resulting in dysfunctional arrangements and increased operating costs.

The concept of the healthcare campus, not unlike a university campus, allows for a progressive development over the lifetime of the campus without the need to achieve an "ultimate solution". Issues of expansion, adjacency and sustainability of the hospital as a whole, as well as the individual departments, might best be served by a campus approach. While we assume that our hospital buildings will serve our needs for 30+ years, the campus concept allows for continual renewal without limit through the strategic removal of individual buildings that have outlived their useful life. This ability to selectively renew, replace and expand individual elements without compromising the ongoing operation of the entire organization should be carefully considered. Additional benefits to patients and staff concerning accessibility, wayfinding and access to day light, while not specific to issues of flexibility, are opportunities for environments that are scaled to the comfort of the individual and organized as links to the future.

The project as budgeted generally encompasses the replacement facility for the MSA General Hospital plus the addition of a new regional cancer care centre, but the site is to be master planned to accommodate a number of other facilities including FVHR Administration, FVHR Materiel Services, Ambulance Station, Child Care Facility, Community Mental Health, Public or Community Health, etc.

Considerations of Building Type

Major tertiary/quaternary teaching hospitals are like urban centres in that they support large numbers of people in a wide variety of work environments. They also accommodate a broad range of space-types, as does a city or town, including: commercial space (offices/medical offices and practices), industrial space (materiel management, engineering and maintenance shops, food production), residential space (patient and resident bed-rooms, bathrooms, living space) and high tech space (diagnostic imaging, clinical and research laboratories, surgical suite, etc.).

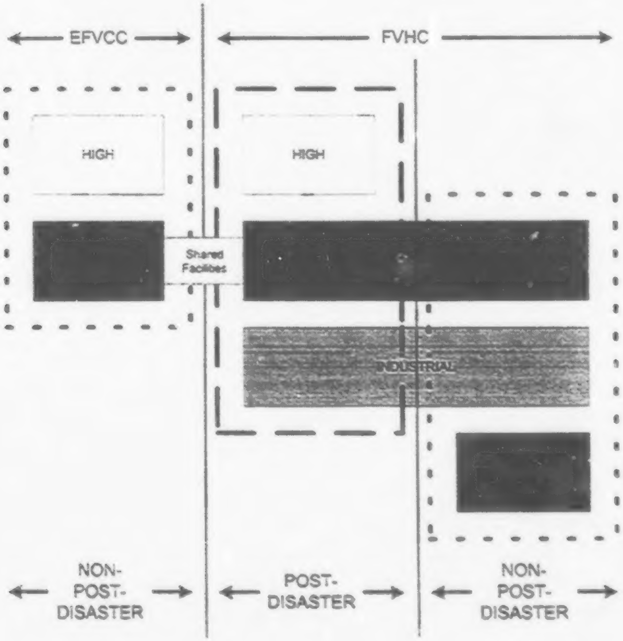
Some spaces in a hospital are recognized as part of a critical cluster that should be post disaster capable while a majority of other spaces do not need to be designed to this capacity.

Locating space in specific building-types, which may attract different design standards and different unit costs to construct, is worthy of consideration at the master planning stage.

Functional components in this program are organized by service groups which signify similarities of physical and support systems requirements and need for post or non-post disaster design. There are 6 main service groups as follows:

- High/Medium Serviced Facilities (Post Disaster)
- Low Serviced/Office/Retail Facilities (Post Disaster)
- Low Serviced/Office/Retail Facilities (Non-Post Disaster)
- Industrial/Shop Facilities (Post Disaster)
- Industrial/Shop Facilities (Non-Post Disaster)
- Regional/Other Facilities (Non-Post Disaster)

The physical plan should achieve a physically grouping of like kinds of space wherever possible.



Flexibility

Versatility in the utilization of inpatient care facilities is to be achieved by maintaining typical inpatient unit sizes and configurations wherever possible. With the exception of the special purpose-built units, all inpatient care programs will be accommodated in general purpose units planned to accept a variety of programs in the future.

Versatility in the utilization of outpatient care facilities is to be achieved by:

- centralization of most outpatient components
- consolidation of modular general space
- segregation of special purpose or highly services (mechanical systems) space

In the highly technical (diagnostic and treatment) areas, large, open blocks of space with wide structural bays and minimum column area on each floor should be provided to allow for:

- a maximum of horizontal relationships between components
- efficient intra-component clustering of spaces
- multiple circulation systems to facilitate separation of traffic types
- maximum flexibility for technical or functional renovation, and/or future conversion to other uses

All building and components should be planned with the capacity for expansion. This may be accomplished through encroachment on adjacent 'soft' space or it should be provided by adjacent new construction. Vertical expansion should be kept to a minimum, but it may be worth considering for any future potential inpatient bed expansion.

Image and Environment

The external image of both the Health Centre and the Cancer Centre should make a symbolic statement about the values, which both the FVHR and BCCA embody. All planning strategies should be considered within the context of advancing patient care and the enhancement of the FVHC and EFVCC as humanistic and unthreatening refuges for healing and access to health and wellness. There are many possible strategies for achieving this goal, examples include:

- provision of a single main entry outdoor and indoor space as a familiar, non-institutional area by making it a lively destination for visitors and patients, provision of varying kiosk retail and food functions, etc.;

- provision of an art program to invite community artists to display their work on a permanent and temporary basis within the buildings and on the site;

- maintenance of a clear distinction between those areas of the facilities which are fully accessible to the public and those that are secured private areas/restricted to staff access only.

Patients and visitors entering the Centres may be disoriented or anxious and many will be older patients who may have diminished cognitive and physical abilities. Every effort should be made to minimize the potentially intimidating nature of the typical institutional setting. Highly technical areas should be visually and acoustically isolated. Patients, visitors and staff should perceive the environment as open and accessible rather than regimented and intimidating.

The Main Entry/Lobby Facilities and Admitting of both Centres as common destinations and often the location where first impressions are made should be easily accessible and welcoming to visitors.

WORKLOAD SUMMARY

The table below illustrates existing workloads (2000/01 fiscal year) for each of the major activities of the components being programmed and the planned future capacity to the year 2005/06 which is the assumed opening capacity and 2015/16 which is the assumed maximum capacity for each of the Fraser Valley Health Centre and Eastern Fraser Valley Health Centre.

Workload Generators	Workload Unit	Existing	Future Plan	
		00/01	05/06	15/16
Fraser Valley Health Centre				
A1 General Medical/Surgical Inpatient Units	Patient days	37,735	44,986	52,414
A2 Maternal Child Program	Patient days			
Maternal/Newborn Care Unit	Patient days	4,344	5,314	654
Special Care Nursery	Patient days	1,440	2,172	3,103
Pediatrics Inpatient Unit	Patient days	3,394	3,942	4,599
Maternal/Fetal OP Services	Total Visits/Tests	1,855	2,402	2,940
A3 Mental Health/Psychiatry Program	Patient days	7,062	10,840	13,140
Psychiatry Out-Patient Clinic	Visits	1,424	3,025	3,625
A4 Palliative Care Unit	Patient days	0	2,172	3,285
A5 Critical Care Units				
Intensive Care/Coronary Care Unit	Patient days	2,210	4,033	5,585
Telemetry Inpatient Unit	Patient days	3,868	4,344	5,256
Respiratory Therapy	Procedures	13,175	25,319	28,552
A6 Emergency	Visits	41,780	50,369	60,000
A7 Surgical Suite	Cases	10,355	11,850	14,000
A8 Medical Imaging				
General Radiology	Exams	34,989	45,486	54,500
Ultrasound (Incl. Echo)	Exams	9504	12,335	15,000
Diagnostic Mammography	Exams	–	1,000	2,000
Magnetic Resonance Imaging	Exams	–	2,500	3,000
Nuclear Medicine	Exams	–	6,650	9,000
Out-of Component Services (Mammography Screening)	Exams	9,000	12,000	15,000
Computed Tomography	Exams	5,627	7,315	9,000
A9 Laboratory Medicine	Laboratory Units	3,117,959	4,375,163	6,505,500,000
A10 Morgue/Autopsy	Deaths	470	516	615
	Autopsies	111	122	240
A11 Biomedical Engineering	N/A			
B1 Surgical Day Care/Same Day Admit	Cases	4,010	6,956	8,554
B2 General Day Care Unit	Cases	10,670	20,466	26,500
B3 Diagnostic Services Centre				
Accessioning	Specimens	21,837	28,783	31,345
ECG Testing	Exams	16,146	17,326	22,794
Holter Monitoring	Exams	359	385	505
Pacemaker Clinic	Visits	–	210	300
ECG Stress	Exams	2,692	20,600	27,100
PF Procedures	Exams	N/A	4,825	12,064
EEG	Exams	574	802	955
Evoked Potential	Exams	181	241	290
EMG	Exams	136	216	260
Vascular Stress Test	Exams	–	1,259	2,200
B4 Pharmacy	New Orders/Refills	342,429	424,137	696,670
	IV Preps	35,120	138,925	208,701
	Acute Care Repack	307,664	482,267	741,929
	LTC Repack	24,939	2,632,023	3,632,191
B5 Health Information Management	Data analysis requests	154	300	400
	Transcription hours	16,945	16,000	17,000
B6 Volunteers/Auxiliary Services	N/A			
B7 Spiritual Care Services	Visits	660	1,350	1,500
B8 Main Entry Facilities	N/A			

Workload Generators	Workload Unit	Existing	Future Plan	
		00/01	05/06	15/16
Fraser Valley Health Centre (cont'd)				
C1 Ambulatory Care Centre				
General Shared Clinics	Visits/Consults	3,652	4,989	5,917
Health Education Centre	# Assemblies/Year	82	629	725
Speciality Clinics/Services	Visits/Procedures/ Admission	18,936	28,831	36,528
C2 Rehabilitation Services	Weight Time Units	396,643	855,000	1,045,000
	PT/OT Attendances-			
	Inpatient	11,520	29,300	35,800
	Outpatient	3,459	12,971	14,000
C3 Site Administration	N/A			
C4 Education Facilities	N/A			
C5 Renal Services	# Patients	0	93	93
D1 Nutrition and Food Services				
Clinical Nutrition	Visits	351,745	422,640	503,450
Food Services	Meal Days	138,371	170,213	193,580
D2 Materiel Services	See A7			
D3 Ambulance Station	N/A			
E1 Plant Services	Total building gross area	–	52,833	52,833
E2 Linen/Housekeeping Services				
Linen Services	# Kg laundry	531,714	918,153	1,118,597
Housekeeping Services	Building area services	18,000	53,000	53,000
E3 Central Staff Facilities	N/A			
F1 Regional Administration	N/A			
F2 Regional Materiel Services (Warehouse)	Patient days	124,719	142,708	168,350
F3 Child Day Care Facility	N/A			
Eastern Fraser Valley Cancer Centre				
Service Area Cancer Frequency				
Area 1 (Vancouver, Burnaby, Richmond, North Shore, Coast Garibaldi)		5,008	5,545	7,002
Area 2 (Fraser Valley, South Fraser, Simon Fraser Health Regions)		4,489	5,303	7,358
Northern Region (Peace-Laird, Northern Interior, Northwest Interior)		804	963	1,340
Total		10,301	11,811	15,700
EFVCC Outpatients				
New Patient Appointments		0	1,358	2,141
Follow-Up Visits		0	8,520	14,510
Medical Oncology				
Chemo Treatment New Courses		0	216	341
Chemo Visits		0	3,461	5,456
Radiation Oncology/Therapy				
Cancer Cases for Lower Mainland		0	11,811	15,700
Consults		0	1,623	1,965
Follow-up Visits		0	6,490	7,658
Fractions Required		0	15	20.8
Fractions EFVCC		0	21,690	36,796

STAFFING SUMMARY

The following table summarizes the existing and projected future staffing requirements in full-time equivalents (FTE) for the Health Centre including relief and callback hours that have been used for the purposes of developing future space requirements. It is recognized that the 2015/16 projected FTE would have to be substantiated and approved for funding over time.

	Existing FTE 2000/01	Future Capacity FTE 2015/16
Fraser Valley Health Centre		
A1 General Medical/Surgical Inpatient Units	119.61	233.29
A2 Maternal Child Program	57.58	111.24
A3 Mental Health/Psychiatry Program	26.22	77.77
A4 Palliative Care Unit	1.81	17.68
A5 Critical Care Units	36.67	121.09
A6 Emergency	70.05	128.06
A7 Surgical Suite	37.22	86.41
A8 Medical Imaging	34.03	76.74
A9 Laboratory Medicine	50.74	84.10
A10 Morgue/Autopsy	0.65	2.01
A11 Biomedical Engineering	1.50	9.00
Subtotal Component A	436.08	947.39
B1 Surgical Day Care/Same Day Admit	5.94	18.51
B2 General Day Care Unit	0	5.79
B3 Diagnostic Services Centre	3.24	20.79
B4 Pharmacy	19.50	42.65
B5 Health Information Management	38.22	56.72
B6 Volunteers/Auxiliary Services	N/A	1.00
B7 Spiritual Care Services	1.00	2.00
B8 Main Entry Facilities	N/A	5.00
Subtotal Component B	67.90	182.46
C1 Ambulatory Care Centre	22.12	42.32
C2 Rehabilitation Services	8.74	14.10
C3 Site Administration	10.00	9.00
C4 Education Facilities	See F1	See F1
C5 Renal Services	0	54.72
Subtotal Component C	42.60	120.14
D1 Nutrition and Food Services	55.15	85.80
D2 Materiel Services	16.40	32.55
D3 Ambulance Station	N/A	N/A
Subtotal Component D	71.55	118.35
E1 Plant Services	11.48	29.40
E2 Linen/Housekeeping Services	34.12	76.35
Subtotal Component E	45.60	105.75
F1 Regional Administration	91.33	123.44
F2 Regional Materiel Services (Warehouse)	16.90	26.10
F3 Child Day Care Facility		
Subtotal Component F	108.23	149.54
Total Staffing FVHC	**771.96**	**1623.63**

The following table summarizes the existing and projected future staffing requirements in full-time equivalents (FTE) for the Cancer Centre including relief and callback hours that have been used for the purposes of developing future space requirements. It is recognized that the 2012/13 projected FTE would have to be substantiated and approved for funding over time.

	Existing FTE 2000/01	Future Capacity FTE 2012/13
Eastern Fraser Valley Cancer Centre		
G1 Radiation Therapy		48.43
G2 Planning Module	0	26.10
G3 Dentistry		2.00
Subtotal Component G	-	76.53
H1 Entry Facilities		1.00
H2 Patient Resources		–
H3 Patient Rehabilitation		10.90
H4 General Clinic Area	0	16.99
H5 Chemotherapy Area		3.93
H6 Pharmacy		4.36
H7 Clinical Trails Office		2.50
H8 Medical Staff Office		23.92
H9 Patient Information Management		18.87
H10 Administration		9.00
H11 Staff Support		N/A
H12 Clinical Support		N/A
Subtotal Component H	-	91.47
Total Staffing EFVCC	**0**	**168.0**

SPACE REQUIREMENTS SUMMARY

The following table summarizes the net area (m^2), the grossing factor used to convert net area to component gross area, and the resultant gross area (m^2) for each functional component and the estimated building gross square metres (BGSM) for each of the Fraser Valley Health Centre and Eastern Fraser Valley Cancer Centre.

Service Groups	Net Area (m^2)	Grossing Factor	Gross Area (m^2)
Fraser Valley Health Centre			
A High/Medium Serviced Facilities (Post Disaster)	15 386.7	1.44	22 222
B Low Serviced Facilities (Post Disaster)	3 224.0	1.32	4 248
C Low Serviced Facilities (Non Post Disaster)	2 765.5	1.35	3 726
D Industrial/Shop Facilities (Post Disaster)	2 576.0	1.22	3 134
E Industrial/Shop Facilities (Non Post Disaster)	905.5	1.13	1 021
F Regional/Other Facilities (Non-Post Disaster)	(3 746.3)	1.22	(4 557)
Total Component Net Area	24 857.7		
Total Component Gross Area			34 351
Unassigned Gross Area (Incl. mech, ext. wall, major circulation, etc..)			11 342
Total FVHC Building Gross Area			**45 693**
Eastern Fraser Valley Cancer Centre			
G High/Medium Serviced Facilities (Non-Post Disaster)	1 541.0	1.54	2 380
H Low Serviced Facilities (Non Post Disaster)	2 816.0	1.23	3 455
Total Component Net Area	4 357.0		
Total Component Gross Area			5 835
Unassigned Gross Area (Incl. mech, ext. wall, major circulation, etc.)			1 275
Total EFVCC Building Gross Area			**7 110**
TOTAL BUILDING NET AREA (BNSM)	**29 214.7**		
TOTAL BUILDING GROSS AREA (BGSM)			**52 803**

Note: Areas in (brackets) have not been included in the Total Component Gross Area or the Total Building Gross Area as they are to be considered outside this project funding.

MAJOR PROGRAM CHANGES

Summarized below are the key changes that have occurred since the development of the Master Program:

Fraser Valley Health Centre

Medical/Surgical Units (A1)

The Master Program provided a total of 168 beds serving medical, surgical, oncology, and telemetry patients, divided into 4-32 bed units, and 1 -40 bed unit with care sub-units of 8 beds with support at the 16 bed level.

The Facility Program provides a total of 160 beds including 142 medical/surgical beds, 10 oncology beds, and 8 surgical step-down beds, divided into 8 bed clusters, with support at the 32 bed level. There are a total of 5 - 32 bed units. The Telemetry beds have been transferred adjacent to the Coronary Care Unit in the Critical Care Unit as recommended in the 'Best Practices' review.

Maternal/Child Program (A2)

The Master Program provided a total of 32 beds consisting of 18 LBRP beds and 14 ante/ postpartum beds in the Maternal/Newborn Care Unit and 20 Beds in the Pediatric Inpatient Unit.

The Facility Program provides 28 LBRP beds and ante/postpartum beds in the Maternal/Newborn Care Unit (2 beds from original plan transferred to Adult Psychiatric Unit) and 18 Beds in the Pediatric Inpatient Unit (2 beds from original plan transferred to the Child/Adolescent Unit in Psychiatry). The Pediatric Inpatient Unit will also accommodate surgical day care/same day admit patients and medical/general day care patients in a 4 stretcher bed unit.

Mental Health /Psychiatry (A3)

The Master Program provided a total of 36 beds consisting of a 4 bed PICU, 28 bed Adult Inpatient Unit, and 4 bed Child & Adolescent Inpatient Unit and included 255 CGSM of space for the Community Mental Health Centre.

The Facility Program now provides a total of 40 beds consisting of a 4 bed PICU, 30 bed Adult Inpatient Unit, and 6 bed Child & Adolescent Inpatient Unit, and the Community Mental Health Centre has been excluded from the project, but may be retained in the Master Plan.

Palliative Care Unit/Program (A4)

The Facility Program is unchanged from the Master Program with the exception that the area now includes the provision of space for both the 10 bed Palliative Care Unit as well as space for the Palliative Care Program staff.

Critical Care Unit (A5)

The Master Program provided a total of 24 beds consisting of 8 ICU beds, 10 CCU beds, and 6 surgical step down beds.

The Facility Program provides a total of 34 beds consisting of 10 ICU beds, 8 CCU beds, and 16 telemetry beds. Surgical step down beds have transferred to the General Medical/Surgical Inpatient Unit.

Emergency (A6)

The Master Program provided a total of 38 spaces (2 spaces for Trauma, 14 spaces for Acute assessment/ treatment, 12 spaces for Fast-track adult, 2 spaces for Fast-track pediatrics, 2 spaces for Psychiatry, a 6 space Clinical Decision Unit for med/surg patients).

The Facility Program provides a total of 38 spaces (2 spaces for Trauma, 16 spaces for Acute, 9 assessment/treatment spaces for Fast-track adult, 1 space for Fast-track pediatrics, 4 space Clinical Decision Unit for the Psychiatric patients, 6 space Clinical Decision Unit for med/surg patients). This component also now Includes the Sexual Assault Nurse Examiner program.

Surgical Suite (A7)

The Master Program provided a total of 9 operating rooms (6 general, 1 cystoscopy, and 2 special operating rooms) and 18 stretcher beds in PACU.

The Facility Program provides a total of 8 operating rooms (5 general, 1 cystoscopy, and 2 special operating rooms) and 16 stretcher beds in PACU.

Medical Imaging (A8)

The Master Program supported 9000 projected CT exams in 1 procedure room and 3400 projected echocardiography exams in 2 procedure rooms.

The Facility Program is currently reviewing the potential need for 2 CT procedure rooms and will now support 6800 projected echocardiography exams in 4 procedure rooms.

Laboratory Medicine (A9)

The Master Program excluded provision of microbiology which was to be consolidated at the Chilliwack General Hospital. The Facility Program now includes provision of microbiology services within the same space allocation.

Biomedical Engineering (A11)

The Master Program provided 7 technologists workrooms, the Facility program provides 10 workrooms.

Surgical Daycare/Same Day Admit (B1)

The Master Program provided 24-26 patient recliners/stretchers for adults and children prep/ recovery and 16 -20 chairs/recliners for the Same Day Admit Program, with hours of operation from 0600 to 1900.

The Facility Program provides 23 patient recliners/stretchers for adults (only) prep/recovery and 16 chairs and 2 recliners for the Same Day Admit Program. The hours of operation have extended to a 17 hour day from 0600 to 2300. Pediatric SDC/SDA patients will be processed through the Pediatric Inpatient Unit.

General Daycare (B2)

The Master Program provided 10 stretcher beds and 6 recliners for day procedures for adults and children, 3 endoscopy rooms, 1 cystoscopy room, 2 minor procedure rooms, 1 bronchoscopy room, and 1 eye procedure room.

The Facility Program provides 18 day procedure stretcher/ recliner positions for adults only, 4 endoscopy/bronchoscopy rooms, 2 cystoscopy rooms, 5 minor surgery procedure rooms (includes eye procedures). Pediatric patients will be processed pre and post procedure through the Pediatric Inpatient Unit.

Diagnostic Services Centre (B3)

The Master Program provided 22,800 ECG exams, and the Facility Program provides 20,600 ECG exams.

Pre-Admission Clinic

The Master Program provided a separate Pre-admission Clinic which has now been combined with the Ambulatory Care Centre component.

Pharmacy (B4)

The Master Program supported 2.8 million unit doses/year and 120,000 IV preps/year.

The Facility Program supports a total of 3.6 million unit doses/year and 209,000 IV preps/year.

Ambulatory Care Centre (C1)

The Master Program included a separate Wellness Centre, but did not include the ECM program, Pre-Admission Clinic or Screening Mammography.

The Facility Program includes the Enhanced Care Management (ECM) Program, Pre-Admission Clinic, Child Health Clinic and Screening Mammography Program, and the Wellness Centre has been eliminated and replaced by a Health Education Centre.

Rehabilitation Services (C2)

The Master Program assumed a workload of 32,000 PT/OT attendances, 22,000 inpatient attendances and 10,000 outpatient attendances. The Facility Program supports a total of 42,271 attendances, 29,300 inpatient attendances and 12,971 outpatient attendances.

Renal Services (C5)

The Master Program supported 90 patients requiring 15 treatment stations, the Facility Program supports 70 patients requiring 15 treatment stations, reflecting PRA recommended 4.5 patients per chair.

Nutrition and Food Services (D1)

The Master Program provided a total component area of 2 127 CGSM, including the kitchen, centralized dishwashing, cafeteria and private dining room. The Facility Program supports the same components within a reduced total component area of 2 064 CGSM.

Linen/Housekeeping (E2)

The Master Program provided support to a total building area of 54 000 to 55 000 BGSM (including EVFCC). The Facility Program provides support to a total building area of 53 000 BGSM (including EVFCC).

Central Staff Facilities (E3)

The Master Program did not include this component as it was assumed that all staff facilities would be decentralized to each component. The Facility Program now includes this component in support of Linen/Housekeeping Services, Plant Services, Materiel Services, and Nutrition & Food Services staff.

Eastern Fraser Valley Cancer Centre

There has been a slight increase in area, but no material changes in service levels or program content.